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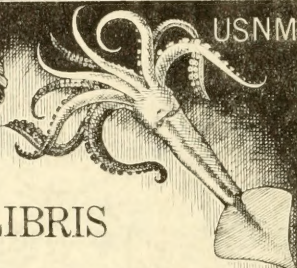
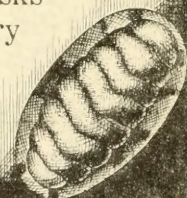
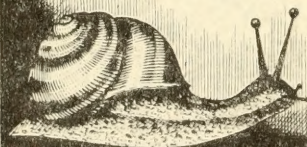
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# The Mollusca of Somerset

(Land, Freshwater, Estuarine and Marine).

BY

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MOLL  
E. W. SWANTON

*Member of the Conchological Society ; Author of "A Pocket Guide to the British Non-Marine Mollusca."*

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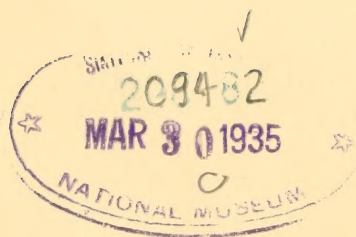
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SOMERSETSHIRE ARCHÆOLOGICAL AND NATURAL  
HISTORY SOCIETY.

1912.





BARNICOTT AND PEARCE  
PRINTERS





## PREFACE.

SHELLS have been poetically designated the "Medals of Creation." They occur in rocks of all ages, and everywhere tell their own story, *e.g.*, in Somerset the huge ammonites of the oolite quarries indicate that countless years ago parts of the county were covered with a tropical sea in which cephalopods swarmed. Existing as well as fossil forms afford valuable evidence of a past order of things. The marine shells that occur in sandy and pebbly beds far inland on the moors are eloquent witnesses to the great alterations of the coast line of the county within comparatively recent times.

The myriads of shells of *Helicella barbara* (perhaps better known under its old name of *Helix acuta*), which live in the hollows of the dunes between Burnham and Berrow, do not attract the attention of the majority of pedestrians, but to the conchologist they have a special interest. Their presence there is to him a link in the chain of evidence that certain elements of our existing fauna arrived from the continent by a land connection in the south-west, of which the Scilly Isles are vestiges.

As with *Helicella barbara*, so it is with all the other mollusca, there is not a single species whose life history is devoid of interest in some way or the other. It is stimulating to have a hobby, especially if it compels one to

"Go forth under the open sky, and list  
To Nature's teachings."

One of the most delightful of such hobbies is conchology, and it is never too late to start upon it. The late Mr. George Barlee, of whose fine collection of shells in the Oxford Museum it has been written, "it should be seen by all conchologists, it



will either fill them with despair or urge them to greater emulation," did not take up the study of shells before his forty-fifth birthday had passed.

There are no collections of Somerset shells likely to fill local conchologists with despair; indeed, it should not be forgotten that the County Museum is without one. It is to be hoped that a committee of Somerset conchologists will undertake the formation of such a collection.

The records set forth in the following pages indicate very clearly the wide field of investigation that still awaits future workers. Our knowledge of the marine species is particularly meagre, and will remain so, I fear, until an enthusiast can be found who will undertake systematic work with the trawl.

It is my pleasure here to acknowledge the kind help of the following correspondents in the preparation of these records:—Miss M. Tanner (Bath); the Rev. H. H. Winwood (Bath); Messrs. H. Bolton (Bristol), H. Corder (Bridgwater), H. L. F. Guermonprez (Bognor), W. Gyngell (Scarborough), N. G. Hadden (Malvern), W. Herridge (Bourton), C. D. Heginbotham (Devizes), F. A. Knight (Winscombe), W. A. Knight (Bruton), W. H. Palmer (Weston-super-Mare), J. Ponsonby (London), W. Denison Roebuck (Leeds), C. Tite (Taunton), and H. Watson (Cambridge).

I am under obligation to Dr. Roger Hutchinson, of Haslemere, and George Hutchinson, of Sidcot School, for photographs; also to the Royal Geographical Society and Mr. W. B. Crump for permission to reproduce three illustrations from Dr. Moss's monograph on "The Vegetation of Somerset."

My best thanks are due to the Council of the Somersetshire Archæological and Natural History Society for so kindly undertaking the publication of this paper, and to Mr. H. St. George Gray for his great assistance in seeing the proofs through the press.

E. W. SWANTON.

*Haslemere, 1912.*

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# The Mollusca of Somerset.

BY E. W. SWANTON,

*Member of the Conchological Society of Great Britain and Ireland.*

## INTRODUCTION.

THE earliest reference to the shells of Somerset with which I am acquainted is that given by Emmanuel Mendes da Costa in his *Historia Naturalis Testaceorum Britanniae* (1778), wherein that most assiduous collector remarks concerning *H. lapicida*, "I have found them on the rocks at and near Matlock in Derbyshire; about Bath in Somersetshire, also on rocks; in Surrey, Wiltshire, and Hampshire, in the moss on the bodies of large trees, and in woods."

It is a matter of regret that no well-known conchologist resided in Somerset in the XVIII Century. The adjacent counties of Wilts, Dorset, and Devon were more fortunate in this respect. Colonel Montagu, F.L.S., the author of the well-known *Testacea Britannica*, was born at Lackham in Wilts, in 1755. He studied very closely the mollusca of the northern part of that county before removing to Kingsbridge in Devon, where he devoted the remainder of his life to an investigation of the ornithology and conchology of South Devon. His contemporary was Dr. Pulteney, who published, in 1799, a catalogue of birds, shells, etc., of the county of Dorset.

In 1822, Mr. J. S. Miller published in the *Annals of Philosophy* a list of land and freshwater shells occurring in the environs of Bristol, but it was not until the middle of the



XIX Century that the conchology of Somerset received serious attention. In 1860 the Rev. A. M. Norman published, in Vol. X of these *Proceedings*, a paper on the Inland Mollusca of Somerset. The records chiefly concern the north and north-western districts, but so carefully had the author investigated the molluscan fauna therein, that he was able to remark in his preface, "one hundred and six species are included in the present catalogue. Deducting five as perhaps erroneously recorded, the remaining number of Somersetshire mollusca will be found to exceed those hitherto met with in any county or district." He hints that it was the first catalogue to enumerate 100 species. It formed the basis of papers on the mollusca of the Bristol district by Messrs. Leipner, Ord, and Poulton, which were published in the seventies.

Though fifty years have passed since it appeared, it is my great pleasure to observe that its learned author (now Rev. Canon A. Merle Norman, D.C.L., F.R.S., etc., of world-wide reputation as a conchologist) is still with us. I wrote to him soliciting notes when I commenced to put together my material for this paper, he replied that he could not give me any additional information as he had not resided in Somerset since the publication of the list.

The molluscan fauna of the coast is apparently poor in species; the polluted waters of the Bristol Channel are probably inimical to molluscan life, but I suspect that the paucity of records is to be partly explained by the absence of observers. On the other hand, the inland fauna is a very rich one, probably not excelled by any other county. Factors contributory to this are the numerous rivers and streams and the great diversity of soil. It is necessary briefly to consider the physical and geological features of the county before reviewing its mollusca from an ecological standpoint.

The majority of the rivers rise in the eastern uplands and flow westwards into the Bristol Channel. The largest is the

Bristol Avon, forming the dividing line from Gloucestershire. Its tributaries, the Frome and Chew, carry off the waters from the north-east side of the Mendips. The river Yeo takes the drainage of the north-western slopes of the Mendips, and enters the channel a few miles below Clevedon. The Axe conducts the waters from the southern slopes of the same range to the sea below Weston-super-Mare. The Polden Hills are drained on the north by the Brue, which also carries off the waters of the eastern uplands about Bruton and Castle Cary, in the neighbourhood of which towns enormous numbers of shells may be found in the rejectmenta left on the banks after heavy floods. Mr. John Morland, in a recent letter to me, comments upon the large numbers of shells occurring in the "drift" left by this river near Glastonbury. "I think I obtained 60 or more species from this source, including a single specimen of *Acme fusca*." The southern slopes of the Poldens are drained by the Cary, a tributary of the Parrett, which it enters near Dunball station, below Bridgwater, in an artificial channel under the name of King Sedgemoor Drain or Cut. Another tributary of the Parrett, the Yeo (formerly Ivel), enters Somerset near Yeovil, and passing through Ilchester, joins the parent stream at Langport. From Langport the Parrett meanders across the county to the sea, and forms, with the tributary Yeo, the dividing line between the two vice-counties, North and South. The Devonshire Axe and the Exe, which drain respectively the southern slopes of the Blackdown Hills and Exmoor, flow southward into Devonshire.

The wild stretches of Exmoor comprise some of the highest land in the county, attaining 1,707ft. at Dunkery Beacon. The Quantock hills stretch from a few miles to the north-west of Taunton towards the sea in the direction of Watchet, but do not reach the coast; Wills Neck, the highest point, is 1,262ft. The Mendips stretch from the neighbourhood of Wells to Weston-super-Mare, and are the most extensive hills



in the northern half of the county. There is much rugged land with beautiful scenery in the eastern parts around Penselwood.

Summarising briefly the geological aspects of the county, the Palæozoic rocks appear in the north-east (Bristol and Radstock coalfields), and in the west (Quantocks and Exmoor), the hollow between them is filled with Mesozoic rocks. The Old Red sandstone appears on the Mendips, also on the banks of the Avon near Clifton. The Devonian formation occurs in the north-west corner of the county, on the Quantocks, and on Exmoor in the extreme west. The Carboniferous limestone crops out between Clifton and Clevedon, and flanks the slopes of the Mendips; the Coal measures occur at Clapton-in-Gordano, Nailsea, and Radstock. The Trias appears between Taunton and Wiveliscombe. The Rhætic beds are largely exposed on the coast at Watchet, and irregularly at other places. The Lias occupies a large tract in the centre of the county, and is well seen at Street. The Oolite forms a ridge on the east and south-east, stretching from Bath through Frome to Wincanton and Henstridge. The escarpments of the limestones of the Lias and Oolite face the west or north-west, the dip being easterly. The Cretaceous rocks (chiefly Upper Greensand) are well developed about Penselwood in the east, and the Blackdown hills in the south. There are numerous post-Pliocene beds in the county, such are everywhere of special interest to the conchologist, as they frequently contain sub-fossil shells in large numbers. The gravel, silt, and peat beds at Burnham, Sedgemoor, Wedmore, etc., and the raised beaches about Weston-super-Mare, come under this heading. Much of the alluvium and peat has been deposited since Roman times. Deposits 12ft. in depth occur at Bath and on the levels at Burnham.

Valley gravel occurs along the Brue valley near Bruton, Castle Cary, and other places. Messrs. Santer Kennard and B. B. Woodward, who examined some material from a deposit

near Castle Cary, found the following species, all of which were obviously of great antiquity :

- Hygromia hispida*, Linné.
- Hygromia rufescens*, Pennant.
- Helix hortensis*, Müller.
- Cochlicopa lubrica*, Müller.
- Ancylus fluviatilis*, Müller.
- Bithynia tentaculata*, Linné.
- Valvata piscinalis*, Müller.
- Pisidium amnicum*, Müller.

A paper by Mr. Herbert Bolton, F.R.S.E., Curator of the Bristol Museum, on the Occurrence of a Shell-bearing Gravel at Dunball Island, was published in the *Proceedings* of the Bristol Naturalists' Society in 1904. At a depth of about 24ft. from Ordnance datum, or 44ft. from the surface, a layer of sand, mud, and fine gravel, averaging 5½ft. in thickness, contained the following species, *Macoma balthica* being the dominant :

#### LAND AND FRESH-WATER.

- Vitrea cellaria*, Müller (= *Hyalinia cellaria*, Westerlund).
- Pyramidula rotundata*, Müller.
- Hygromia hispida*, Linné.
- Vallonia pulchella*, Müller.
- Helix hortensis*, Müller.
- Cochlicopa lubrica*, Müller.
- Succinea putris*, Linné.
- Ancylus fluviatilis*, Müller.
- Limnæa peregra*, Müller.
- Planorbis albus*, Müller.
- Planorbis glaber*, Jeffreys.
- Planorbis umbilicatus*, Müller.
- Paludestrina stagnalis*, Baster (= *Hydrobia ulvæ*, Pennant).
- Bithynia tentaculata*, Linné.
- Bithynia leachi*, Sheppard.
- Valvata piscinalis*, Müller.

**Pomatias elegans**, Müller (= *Cyclostoma elegans*, Müller).  
**Neritina fluviatilis**, Linné.

#### MARINE.

**Scrobicularia plana**, Da Costa (= *S. piperata*, Bellonius).  
**Macoma balthica**, Linné (= *Tellina balthica*, Linné).  
**Littorina obtusata**, Linné.  
**Littorina rudis**, Maton.  
**Leuconia bidentata**, Montagu.

The peat beds yield but scanty molluscan remains. I have examined many sections in the neighbourhood of Shapwick, but succeeded in finding nothing more than fragments of various species of *Planorbis* and *Pisidium*, in such a condition as to render specific identification impossible. Many years ago Mr. Arthur Bulleid, F.S.A., shewed me some shells from the peat at the Glastonbury Lake-village, they comprised three common inhabitants of the rhines at the present time, viz. :

**Valvata piscinalis**, Müller.  
**Bithynia tentaculata**, Linné.  
**Pisidium amnicum**, Müller.

Raised beaches occur at Anchor Head and Woodspring Hill north of Weston-super-Mare. They are between 20 to 30ft. above high-water mark, and are covered by blown sand, rubble, and talus. They consist of sand and shingle (Carboniferous Limestone pebbles with occasional flints) well stratified and often compacted. Mr. E. C. H. Day, F.G.S., published, in the *Geological Magazine* of 1866, a paper on these raised beaches. He observes that the shingle was cemented into masses of conglomerate so hard "that it required violent labour with heavy tools to break them." Embedded in the masses were bones of horses and hyænas (cave), with numerous shells of *Littorina littorea*, Linné and *Tellina tenuis*, da Costa. Mr. H. B. Woodward is of opinion that these remnants of



raised beaches are "possibly of the same age as some of the valley gravels into which they may have merged."

The following species have been recorded from them :

*Mytilus edulis*, Linné.

*Ostrea edulis*, Linné.

*Macoma balthica*, Linné (= *Tellina balthica*, Linné).

*Cardium edule*, Linné.

*Littorina littorea*, Linné.

*Buccinum undatum*, Linné.

Old beaches have been traced on the Lias and Red Marl in

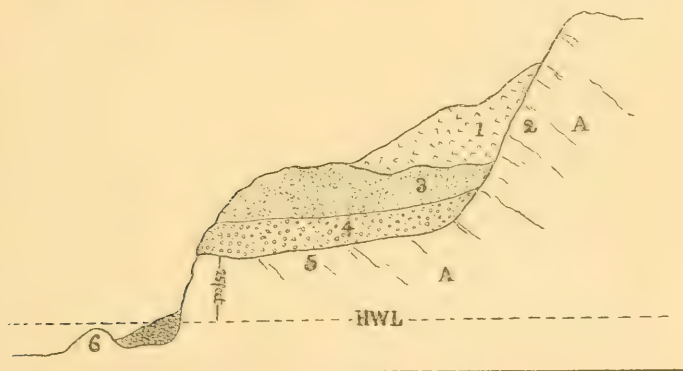


Diagram of a Raised Beach, etc., at Birnbeck Cove,  
Weston-super-Mare (after Day).

1. "Head." 2. Ancient Cliff. 3. Ancient Dunes. 4. Ancient Beach.  
5. Ancient Shore. 6. Present Beach.  
AA. Carboniferous Limestone. HWL. High-water Level.

many parts of the moorlands, in places inland and about the present sea level. They are known as the Burtle Beds, being so named by De la Beche because they were at one time well shown at Burtle near Glastonbury. They may be traced along many parts of the border of King's Sedgemoor, Sutton Mallet, Weston Zoyland, Chedzoy, and Middlezoy, in the last they are sometimes dug by the roadside. These beaches are composed of sand with occasional pebbles (sometimes cemented into hard bands) and recent marine shells. "Whether these

Burtle Beds were contemporaneous with the raised beaches, or were due to later incursions of the sea over the lowlands, is not certain" (H. B. Woodward).

Mr. Henry Corder obtained the following shells from a very fossiliferous patch of Burtle Bed at Perry Green, Wembdon, by a wet roadside ditch :

*Mytilus edulis*, Linné.

*Ostrea edulis*, Linné.

*Macoma balthica*, Linné (= *Tellina balthica*, Linné).

*Cardium edule*, Linné.

*Gibbula cineraria*, Linné (= *Trochus cinerarius*, Linné).

*Littorina littorea*, Linné.

*Littorina neritoides*, Linné.

*Paludestrina stagnalis*, Baster (= *Hydrobia ulvæ*, Pennant).

*Natica catena*, da Costa.

*Buccinum undatum*, Linné.

*Ocenebra erinacea*, Linné (= *Murex erinaceus*, Linné).

*Nassa reticulata*, Linné.

*Tornatina obtusa*, Montagu (= *Utriculus obtusus*, Montagu).

Mr. H. St. George Gray has recorded the occurrence of the following species from the excavation of Wick Barrow, Stogursey :<sup>1</sup>

*Vitrea alliaria*, Miller.

*Helix aspersa*, Müller (abundant).

*Helix nemoralis*, Linné (common).

*Cæcilioides acicula*, Müller (= *Achatina acicula*, Müller).

*Pomatias elegans*, Müller (= *Cyclostoma elegans*, Müller).

*Patella vulgata*, Linné.

A Holocene deposit on Brean Down (south side) yielded four species when I examined it in June, 1910 :

*Vitrea cellaria*, Müller.

*Helicella virgata*, da Costa.

*Helicella caperata*, Montagu.

*Helicella barbara*, Linné (= *Helix acuta*, Müller).

1. *Proc. Som. Arch. Soc.*, LIV, ii, 52.

It is highly probable that further search would yield many additional species.

The geological systems above alluded to comprise many formations and sub-divisions. Though very complex—ranging from the Old Red Sandstone to the Chalk—yet, from an ecological standpoint, they may be classed under the three headings of sandstones, limestones, and deep marls and clays, as pointed out by Dr. C. E. Moss in his admirable paper on the Geographical Distribution of Vegetation in Somerset.<sup>1</sup> I have drawn largely upon his paper for my botanical notes in the subjoined brief survey of the inland mollusca of the county, and have much pleasure in here acknowledging my indebtedness, and expressing my appreciation of its value.

Dr. Moss observes that “East Somerset has a slightly higher summer temperature and a slightly lower winter temperature than West Somerset, and also from the geological and botanical standpoints, East Somerset has more in common with eastern England than with south-western England.” An examination of the molluscan fauna gives zoological support to this conclusion, *e.g.* we do not find *Jaminia anglica* in the eastern part of the county ; other examples might be quoted.

Considered as a whole, the mollusca of Somerset belong to the Lusitanian group, the term “Lusitanian” being understood to include the extreme south-west of Europe (and north-west Africa), and not limited to Lusitania of Roman times, which included only a large area of Portugal. A “Lusitanian” mollusc is one which has migrated from South-Western Europe to Central, Southern, or Northern Europe, either in pre-glacial times or later. Forbes considered that the Lusitanian elements are the oldest of the components of our existing fauna and flora, and date from Miocene times. Molluscs of this group occur chiefly, as far as the United Kingdom is concerned, in the mountainous districts of the south-west and

1. *Royal Geographical Society*, 1907.





						Cornwall W.	Cornwall E.	Devon S.	Devon N.	Somerset S.	Somerset N.	Wills N.	Wills S.	Dorset.
Pyramidula rupestris	...	...	...	x	x	x	-	X	X	x	x	x	x	x
P. rotundata	...	...	...	x	x	x	x	X	X	x	x	x	x	x
Helicella virgata	...	...	...	x	x	x	x	X	X	x	x	x	x	x
H. itala (=ericetorum)	...	..	...	x	-	-	-	X	X	x	x	x	x	x
H. caperata	...	...	...	x	x	x	x	X	X	x	x	x	x	x
H. barbara (=acuta)	..	...	...	x	x	x	x	-	X	-	-	-	-	x
H. cantiana	..	...	...	-	-	x	-	X	X	/	/	/	/	x
Hygromia fusca	...	...	...	-	x	x	x	X	X	-	/	/	/	/
H. granulata	...	...	...	x	x	x	x	X	X	x	x	x	x	x
H. hispida	...	...	...	x	x	x	x	X	X	x	x	x	x	x
H. revelata	...	...	...	x	x	x	x	-	-	-	-	-	-	-
H. montivaga	...	...	...	x	-	-	-	-	-	-	-	-	-	-
H. rufescens	...	...	...	x	x	x	x	X	X	x	x	x	x	x
Acanthinula aculeata	...	...	...	-	x	-	x	X	/	x	x	x	x	x
Vallonia pulchella (aggregate)	...	...	...	x	x	x	-	X	X	x	x	x	x	x
V. costata	...	...	...	-	-	x	x	X	X	x	/	/	/	x
V. excentrica	...	...	...	-	-	x	x	X	X	-	x	x	x	x
Helicigona lapicida	...	...	...	-	-	x	x	X	X	/	x	x	x	x
H. arbustorum	...	...	...	-	x	x	x	X	X	x	x	x	x	x
Helix aspersa	...	...	...	x	x	x	x	X	X	x	x	x	x	x
H. pomatia	...	...	...	-	-	x	-	-	-	/	/	/	/	-
H. nemoralis	...	...	...	x	x	x	x	X	X	x	x	x	x	x
H. hortensis	...	...	...	x	x	x	x	X	X	x	x	x	x	x
H. pisana	...	...	...	x	-	-	/	-	-	-	-	-	-	/
Ena montana	...	...	...	-	-	x	-	-	X	/	/	/	/	/
E. obscura	...	...	...	x	-	x	x	X	X	x	x	x	x	x
Cochlicopa lubrica	...	...	...	x	x	x	x	X	X	x	x	x	x	x
Azeca tridens	...	...	...	x	-	-	-	-	X	-	x	/	/	/
Cæcilioides acicula	...	...	...	-	-	-	-	X	X	x	x	x	x	x

						Cornwall W.	Cornwall E.	Devon S.	Devon N.	Somerset S.	Somerset N.	Wilts N.	Wilts S.	Dorset.
<i>Jaminia secale</i>	...	...	...	...	...	-	-	x	-	-	X	/	/	x
<i>J. anglica</i> (= <i>Pupa ringens</i> )	...	...	...	...	...	-	-	-	x	-	/	-	-	-
<i>J. cylindracea</i>	...	...	...	...	...	x	x	x	x	X	X	/	/	x
<i>J. muscorum</i>	...	...	...	...	...	x	-	x	x	X	X	/	x	x
<i>Vertigo minutissima</i>	...	...	...	...	...	-	-	-	-	-	X	-	-	x
<i>V. antivertigo</i>	...	...	...	...	...	-	-	x	x	-	X	-	x	x
<i>V. substriata</i>	...	...	...	...	...	-	-	-	x	-	-	/	-	-
<i>V. pygmæa</i>	...	...	...	...	...	-	x	x	x	X	X	x	-	x
<i>V. moulinsiana</i>	...	...	...	...	...	-	-	-	x	-	-	-	-	x
<i>V. pusilla</i>	...	...	...	...	...	-	-	x	x	-	/	-	-	/
<i>V. augustior</i>	...	...	...	...	...	-	-	-	-	-	/	/	-	-
<i>Balea perversa</i>	...	...	...	...	...	-	x	x	x	X	X	x	x	/
<i>Clausilia laminata</i>	...	...	...	...	...	x	-	x	x	/	X	x	x	x
<i>C. biplicata</i>	...	...	...	...	...	-	-	-	-	-	/	/	/	-
<i>C. bidentata</i>	...	...	...	...	...	x	x	x	x	X	X	x	x	x
<i>C. rolpheii</i>	...	...	...	...	...	-	-	x	-	-	X	-	x	/
<i>Succinea putris</i>	...	...	...	...	...	x	x	x	x	X	X	x	x	x
<i>S. elegans</i>	...	...	...	...	...	x	x	x	x	X	X	x	/	x
<i>S. oblonga</i>	...	...	...	...	...	-	-	-	x	-	X	-	/	-
<i>Carychium minimum</i>	...	...	...	...	...	x	x	x	x	X	X	x	x	x
<i>Phytia myosotis</i>	...	...	...	...	...	-	-	x	x	-	/	-	-	-
<i>Ovatella bidentata</i>	...	...	...	...	...	-	-	x	x	-	/	-	-	/
<i>Ancylus fluviatilis</i>	...	...	...	...	...	x	x	x	x	X	X	/	/	x
<i>Acroloxus lacustris</i>	...	...	...	...	...	-	-	x	-	/	X	x	x	/
<i>Limnæa auricularia</i>	...	...	...	...	...	-	-	x	-	/	X	x	x	-
<i>L. peregra</i>	...	...	...	...	...	x	x	x	x	X	X	x	x	x
<i>L. palustris</i>	...	...	...	...	...	x	x	x	x	X	X	x	x	x
<i>L. truncatula</i>	...	...	...	...	...	x	x	x	x	X	X	x	x	x
<i>L. stagnalis</i>	...	...	...	...	...	-	-	-	-	X	X	x	x	x



						Cornwall W.	Cornwall E.	Devon S.	Devon N.	Somerset S.	Somerset N.	Wilts N.	Wilts S.	Dorset.
<i>Limnæa glabra</i> ... ..	...	...	...	...	...	X	X	—	—	—	X	x	x	x
<i>Amphipeplea glutinosa</i> ...	...	...	...	...	...	—	—	—	—	/	—	—	—	—
<i>Planorbis corneus</i> ...	...	...	...	...	...	—	—	—	—	/	X	x	x	—
<i>P. albus</i> ... ..	...	...	...	...	...	X	X	X	X	X	X	x	x	x
<i>P. glaber</i> ... ..	...	...	...	...	...	—	—	X	—	—	X	x	—	x
<i>P. crista</i> ... ..	...	...	...	...	...	X	X	X	—	X	X	/	/	x
<i>P. carinatus</i> ... ..	...	...	...	...	...	—	—	X	—	X	X	x	x	—
<i>P. umbilicatus</i> ... ..	...	...	...	...	...	—	—	X	—	X	X	x	x	x
<i>P. vortex</i> ... ..	...	...	...	...	...	—	x	x	—	X	X	x	x	x
<i>P. spirorbis</i> ... ..	...	...	...	...	...	X	X	X	X	X	X	x	x	—
<i>P. contortus</i> ... ..	...	...	...	...	...	—	—	X	—	X	X	x	x	x
<i>P. fontanus</i> ... ..	...	...	...	...	...	—	—	X	—	X	X	x	—	—
<i>Segmentina nitida</i> (= <i>P. lineatus</i> )						—	—	—	—	—	—	x	x	x
<i>Physa fontinalis</i> ... ..	...	...	...	...	...	—	—	X	—	X	X	x	x	x
<i>Aplecta hypnorum</i> ... ..	...	...	...	...	...	—	—	X	—	X	X	x	x	/
<i>Paludestrina jenkinsi</i> ...	...	...	...	...	...	—	—	X	x	—	—	—	—	—
<i>P. ventrosa</i> ... ..	...	...	...	...	...	—	—	—	—	—	/	—	—	/
<i>P. stagnalis</i> ... ..	...	...	...	...	...	—	x	x	—	—	/	—	—	—
<i>Bithynia tentaculata</i> ...	...	...	...	...	...	X	—	X	x	X	X	x	x	x
<i>B. leachii</i> ... ..	...	...	...	...	...	—	—	X	—	—	X	/	x	/
<i>Vivipara vivipara</i> ... ..	...	...	...	...	...	—	—	X	—	/	X	x	x	—
<i>V. contecta</i> ... ..	...	...	...	...	...	—	—	—	—	—	/	—	—	—
<i>Valvata piscinalis</i> ... ..	...	...	...	...	...	X	—	X	—	X	X	x	x	x
<i>V. cristata</i> ... ..	...	...	...	...	...	—	—	—	—	/	X	/	x	/
<i>Pomatias elegans</i> ... ..	...	...	...	...	...	X	—	X	x	X	X	x	x	x
<i>Acicula lineata</i> ... ..	...	...	...	...	...	—	—	—	—	X	X	/	/	x
<i>Neritina fluviatilis</i> ... ..	...	...	...	...	...	X	—	X	—	X	X	x	x	x
<i>Dreissensia polymorpha</i> ...	...	...	...	...	...	—	—	X	—	—	X	x	/	—
<i>Unio pictorum</i> ... ..	...	...	...	...	...	—	—	X	—	—	X	x	x	x

					Cornwall W.	Cornwall E.	Devon S.	Devon N.	Somerset S.	Somerset N.	Wilts N.	Wilts S.	Dorset.
<i>Unio tumidus</i>	...	...	...	...	-	-	-	-	/	X	x	-	x
<i>Anodonta cygnæa</i>	...	...	...	...	-	x	x	x	/	X	/	x	x
<i>Sphærium rivicola</i>	...	...	...	...	-	-	-	-	-	X	x	x	x
<i>S. corneum</i>	...	...	...	...	-	-	x	x	X	X	x	x	x
<i>S. lacustre</i>	...	...	...	...	-	-	x	x	X	X	x	x	x
<i>S. pallidum</i>	...	...	...	...	-	-	-	-	/	/	-	-	-
<i>Pisidium amnicum</i>	...	...	...	...	-	-	x	-	-	X	/	x	x
<i>P. henslowianum</i>	...	...	...	...	-	-	-	-	-	X	x	x	/
<i>P. subtruncatum</i>	...	...	...	...	x	x	x	x	X	X	x	x	x
<i>P. pulchellum</i>	...	..	...	...	-	-	x	-	-	X	/	/	x
<i>P. pusillum</i>	...	...	...	...	x	x	x	x	X	X	x	x	x
<i>P. nitidum</i>	...	..	...	...	-	-	x	-	X	X	/	-	x
<i>P. obtusale</i>	...	...	...	...	-	-	-	-	X	X	-	/	-
<i>P. gassiesianum</i> (= <i>roseum</i> )	...	...	...	...	-	x	x	-	X	X	x	-	x

the west of Ireland, and the south-west of England and Wales. Dr. Scharff considering discontinuous distribution to be an index of antiquity, assigns our terrestrial mollusca to two provinces :

(1) England and Wales (except south-west).

(2) South-west England and Wales, and the whole of Scotland and Ireland.

The second province contains six species which are entirely absent from the first, viz.: *Testacella maugei* Férussac, *Geomalacus maculosus* Allman, *Helicella barbara* Linné, *Hygromia revelata* Férussac, *Helix pisana* Müller, and *Jaminia anglica* Férussac.

Three, viz.: *Testacella maugei*, *Helicella barbara* (= *Helix acuta*), and *Jaminia anglica* (= *Pupa ringens*) occur in Somers-

set, and it remains for some zealous conchologist to add a fourth, *Hygromia revelata*, which should be looked for on hills near the coast in the extreme west of the county.

With the single exception of *Geomalacus maculosus*, all the Lusitanian species occur in the Channel Islands.

The Census List published by the Conchological Society forms the basis of the list given above, which shews the comparative distribution of the land and freshwater mollusca of the five south-western counties of England. Records marked X have been verified by the Society's Recorder. Excepting Dorset, all the counties are divided into "vice-counties," the areas of which are defined as follows in the Census List.

Cornwall W. and E., divided by the high road from Truro through St. Columb to the inland extremity of Padstow Creek.

Devon N. and S., divided by the watershed line which commences at the Tamar, about midway between Tavistock and Launceston, passes over the ridge of Dartmoor, and joins the western canal at Tiverton.

Somerset N. and S., divided by the river Parret from Bridgwater to Ilchester, the line thence curving round to the north extremity of Dorsetshire.

Wilts N. and S., separated by the Kennett and Avon Canal.

I do not quite understand what is implied by the above definition of the dividing line of the vice-counties of Somerset, which is apparently based upon H. C. Watson's subdivision in *Cybele Britannica*, and prefer to divide north from south by the Parret to Langport, and its tributary the Yeo to Ilchester and Yeovil. The Parret does not pass through Ilchester.

One hundred and thirty non-marine species have been recorded from the five counties. Eight are not known to occur in Somerset, viz., *Hygromia revelata*, *Férussac*; *Hygromia montivaga*, *Westerlund*; *Helix pomatia*, *Linné*; *Helix pisana*, *Müller*; *Vertigo substriata*, *Jeffreys*; *Vertigo moulinsiana*,



*Dupuy*; *Segmentina nitida*, Müller (= *Planorbis lineatus*, Walker); and *Paludestrina jenkinsi*, Smith.

We may adopt, as a convenient basis for some comments on the ecology of Somerset mollusca, the headings under which Dr. Moss has arranged the systems of vegetation of the County.

## I. LOWLAND AREA.

### A. COAST REGION.

(1). MUDDY SALT MARSH FORMATION.

(2). DUNE FORMATION.

### B. THE LEVELS.

(1). AQUATIC FORMATION.

(2). PEAT-MOOR FORMATION.

## II. UPLAND AREA.

### A. THE DEEP MARLS AND CLAYS.

### B. THE LIMESTONES.

### C. THE SANDSTONES.

## I. LOWLAND AREA.

Characterised by extensive recent deposits. Mud flats, sand hills, alluvium and peat bogs. Dr. Moss observes that "the area represents a gain of *terra firma*, from the sea chiefly, by various means of reclamation, and the retention of the land is still a matter of difficulty and expense. The area is indeed a great monument to the patience, skill and industry of the Somersetshire people. The land was primitively treeless. Not a single example of natural woodland occurs, and even plantations are uncommon." The ancient shore may be traced here and there many miles inland, the sub-fossil shells occurring in it and in the raised beaches, etc., of this area have been noted above.



FIXED  
DUNES.EMBRYONIC  
DUNE.TIDAL  
debris.*Salsola*  
*Kali, L.*

FIG. 1.—The coast between Berrow and Burnham. *Helix aspersa*, Müller, and *H. nemoralis*, L. are abundant on the embryonic dune.



FIG. 2.—Shifting Dunes near Berrow, capped with Marram Grass (*Ammophila arenaria*, Link); a well-known haunt of *Helicella barbara*, Linné.



## A. COAST REGION.

## (1). MUDDY SALT MARSH FORMATION.

Muddy salt-marshes occur at the mouths of the rivers. The extreme conditions of life on the seaward side explain the paucity of their molluscan fauna. *Littorina rudis*, Maton, and *Paludestrina stagnalis*, Baster (= *Hydrobia ulvæ*, Pennant) occur in large numbers associated with halophytic plants such as *Salicornia europæa*, Linné; *Glyceria maritima*, Mert and Koch, and *Triglochin maritimum*, Linné. On the landward side conditions are less unfavourable, the mud is seldom tide-washed, and the water is usually fresh. In the marshes and rhines, which are brackish during very high tides, *Limnæa truncatula*, Müller, occurs in great numbers, its frequency is very noticeable during dry summers, when the water in the rhines is low. The strong rush of water up the river mouths frequently carries *Macoma balthica*, Linné; *Littorina obtusata*, Linné; *Littorina rudis*, Maton, and others, considerable distances inland.

*Phytomyosotis*, Draparnaud, and *Ovatellabidentata*, Montagu, are frequent under stones just above high water mark at the mouths of all the tidal rivers.

## (2). DUNE FORMATION.

The sand dunes are frequented by an interesting association of a few species, the individuals of which often occur in enormous numbers. Amongst the strand plants of the foreshore (*Atriplex hastata*, Linné; *Salsola Kali*, Linné, and other representatives of the Chenopodiaceæ) dead shells of *H. aspersa*, Müller, and *H. virgata*, da Costa, chiefly occur. Behind the foreshore there is an association of plants (see Plate 1, fig. 1) with sea-couch grass (*Agropyron junceum*, Beauv.) the dominant one, and the sand sedge (*Carex arenaria*, Linné) the sub-dominant. Amongst these we find

*Helix aspersa*, Müller (dominant), associated with

*Helicella virgata*, da Costa.

*Helicella caperata*, Montagu.

*Helix nemoralis*, Linné.

*H. aspersa* is usually very abundant, such broad-leaved plants as *Rumex crispus*, Linné, and *Cynoglossum officinale*, Linné, affording a welcome retreat during periods of drought. The homing instinct of this species may be well seen on a hot morning following a wet night, when many isolated plants are surrounded at distances varying from a foot to a yard by belated individuals who failed to gain the shade and protective screen reached by their more punctual brethren.

Behind the Sea-couch Grass association we have the high dunes capped with Marram Grass (*Ammophila arenaria*, Link). (Plate 1, fig. 2). The side of the dune which faces the sea is always steep, but the slope never exceeds 30°, and the sand is continually blowing over it to the lesser slope on the leeward or landward side.

On very windy days countless dead shells of *Paludetrina stagnalis*, Baster; *Helicella barbara*, Linné; *Helicella virgata*, da Costa, and *Jaminia muscorum*, Linné, are often blown into little heaps up the dune face, rolling back again between the gusts. *Helicella itala*, Linné, and *H. caperata*, Montagu, also occur with them but in lesser numbers. At the base of the dunes bleached shells of *Helix aspersa*, Müller, lie in hundreds.

Amongst the Marram Grass and on the leeward slope of the dunes we find the following association :

*Helicella barbara*, Linné (*Helix acuta*, Müller), dominant.

*Jaminia muscorum*, Linné (= *Pupa marginata*, Draparnaud),  
sub-dominant.

*Helicella virgata*, da Costa.

*Helicella itala*, Linné (= *H. ericetorum*, Müller).

*Helicella caperata*, Montagu.

*Helix aspersa*, Müller.

*Helicella barbara* is partial to the roots of the Marram Grass, coming forth in surprising numbers in rainy weather. *Jaminia muscorum* frequents the roots of the grasses *Festuca rubra*, L., var. *arenaria*, Fries; *Festuca membranacea*, Druce; *Agropyron junceum*, Beauv.; and *H. aspersa* shews a partiality for *Euphorbia paralias*, Linné, and the less widely distributed *Iris fœtidissima*, Linné.

At the base of the dune slopes the following association occurs :

*Jaminia muscorum*, Linné (dominant).

*Agriolimax agrestis*, Linné.

*Vitrina pellucida*, Müller (amongst moss).

*Helicella caperata*, Montagu.

*Hygromia rufescens*, Pennant.

*Helix aspersa*, Müller.

The chief plants with which these are associated are *Carex arenaria*, Linné; *Festuca rubra*, var. *arenaria*, Fries; *Ononis repens*, Linné, var. *horrida*, Lange; *Lotus corniculatus*, Linné; and *Thymus serpyllum*, Linné; with the last named *Helix caperata* is chiefly associated.

## B. THE LEVELS.

The flat plain of the Levels consists of tidal, lacustrine, and river deposits, protected from inundation at abnormally high tides by the dunes, the sea-walls, and the sluices at the mouths of the tidal rivers. Inundations occasionally occur. The whole district is under pastoral cultivation, and the fields are separated by shallow ditches, or rhines.

### (1). AQUATIC FORMATION.

Amongst the vegetation of the marshy land, on the margins of the rhines, we find the following molluscan association :

*Agriolimax agrestis*, Linné.

*Vitrea crystallina*, Müller.

- Vitrea alliaria*, *Miller*.  
*Zonitoides nitidus*, *Müller* (local).  
*Arion subfuscus*, *Draparnaud*.  
*Arion hortensis*, *Férussac*.  
*Arion fasciatus*, *Nilsson*.  
*Pyramidula rotundata*, *Müller* (common).  
*Hygromia hispida*, *Linné* (common).  
*Hygromia rufescens*, *Pennant* (dominant).  
*Cochlicopa lubrica*, *Müller*.  
*Carychium minimum*, *Müller*.

*H. hispida* occurs in great numbers wherever nettles fringe the rhine, it bears submergence well, and may be not infrequently found crawling on the stems of aquatic plants. *Agriolimax agrestis* is apparently the only species in this association which is unable to survive prolonged submersion. I noticed, in several localities which had been recently flooded, this species lying dead, obviously drowned, in some numbers near the margins of the rhines.

The edges of the rhines are fringed with aquatic plants, characterised by their upright leaves, *e.g.*, *Phragmites communis*, *Trin.*; *Iris pseudacorus*, *Linné*; *Typha latifolia*, *Linné*; and *Sparganium erectum*, *Linn.* Crawling on their stems and leaves, often in large numbers, are:

- Succinea elegans*, *Risso* (dominant).  
*Succinea putris*, *Linné*.  
*Limnæa peregra*, *Müller*.  
*Limnæa truncatula*, *Müller*.

The dredge-net obtains from amongst the submerged stems of these plants the following:

- Limnæa palustris*, *Müller*.  
*Planorbis umbilicatus*, *Müller* (= *P. complanatus*, *Jeffreys*).  
*Planorbis vortex*, *Linné*.  
*Planorbis fontanus*, *Lightfoot* (= *P. nitidus*, *Müller*, cf. *Jeffreys*)  
*Physa fontinalis*, *Linné*.  
*Valvata cristata*, *Müller*.



**Sphærium corneum**, *Linné*.

**Pisidium pusillum**, *Gmelin* (= *P. fontinale*, *Draparnaud*).

Beyond the Upright-leaf association or Reed belt we frequently find the surface of the rhine covered with plants characterised by their floating leaves, amongst the dominant species we may mention *Hydrocharis morsus-ranæ*, *Linné*; *Lemna minor*, *Linné* (other species of *Lemna* occur, *L. trisulea*, *Linné*, abundantly in some parts), *Glyceria fluitans*, *Br.*, and *Ranunculus heterophyllus*, *Weber*. Dr. Moss observes that the Upright-leaf and the Floating-leaf associations are kept in their respective positions by the ditching operations of the farmers, "but for this work, the upright-leaf forms would eventually occupy the whole rhine, which would become filled with humus and silt. This process can be seen taking place in the disused brick-ponds which are not cleaned by the ditchers."

In rhines partially silted up we find *Sphærium corneum* and *Pisidium pusillum* in the mud, the last mollusc to retain its hold under the gradual change of conditions is *Limnæa truncatula*. The molluscs to be found in connection with the Floating-leaf association are :

**Limnæa peregra**, *Müller*.

**Limnæa palustris**, *Müller*.

**Limnæa stagnalis**, *Linné*.

**Planorbis corneus**, *Linné* (local).

**Planorbis umbilicatus** *Müller* (dominant).

**Planorbis vortex**, *Linné*.

**Planorbis spirorbis**, *Linné*.

**Planorbis contortus**, *Linné*.

**Physa fontinalis**, *Linné*.

**Bithynia tentaculata**, *Linné*.

**Sphærium corneum**, *Linné*.

*Limnæa palustris* and *Limnæa stagnalis* are typical shallow-water species. The *Lemna* often forms such a dense carpet of vegetation on the rhine surface, that a piece a yard square

may be dragged out by the scoop. The smaller species of *Planorbis*, *Physa fontinalis*, and the young of *Limnæa peregra* creep on the lower (submerged) surface in great numbers.

In rhines containing but little weed and much "green scum" I found *Bithynia tentaculata* in great plenty associated with *L. palustris*, *L. stagnalis*, *P. nitidus*, and *V. piscinalis*. From a rhine covered only with a single species of *Ranunculus*, apparently typical *R. heterophyllus*, *Weber*, I dredged *Limnæa peregra* and *Bithynia tentaculata*, neither in great numbers.

In the largest rhines and in the canals the greater width of the channel lessens the competition between the plants, and the open centre permits sufficient light to enter the water to allow of the growth of submerged leaf plants such as *Ranunculus circinatus*, *Sibth*; *Hippuris vulgaris*, *Linne*; various species of *Potamogeton* and *Chara*, *Utricularia vulgaris*, *Linne*; *Hottonia palustris*, *Linne*; and *Myriophyllum verticillatum*, *Linne*. Here we find the following association :

*Limnæa peregra*, *Müller*.

*Valvata piscinalis*, *Müller*.

*Anodonta cygnæa*, *Linne* (local).

*Sphærium rivicola*, *Leach* (rare).

*Sphærium lacustre*, *Müller*.

*Pisidium amnicum*, *Müller*.

## (2). PEAT-MOOR FORMATION.

The molluscan fauna of the rhines of the peat-moors much resembles that of other parts of the Levels. *Succinea elegans* is the dominant species in the reed belt, and often occurs in multitudes on the stone walls of the bridges crossing the lesser rhines. Two or three large slabs of Lias stone lying flat on the walls form the bridge proper; swallows not infrequently build their nests on the walls just below the slabs.

Molluscs are certainly less abundant (as may indeed be noted throughout the Levels), both in species and numbers, in rhines containing no duckweed. Wherever *Lemna* occurs

there *Planorbis* abounds, in company with *Limnæa stagnalis*, *Limnæa palustris*, and *Bithynia tentaculata*, an association everywhere indicative of shallow water. I find no *Pisidium* in rhines overshadowed by oaks, as near Shapwick station. Oaks are uncommon on these moors, which differ from the rest of the levels in having plantations here and there of birch, alder, Scots pine, spruce and larch. In the plantations near Shapwick station I noted the following association :

*Agriolimax agrestis*, *Linné*.

*Vitrina pellucida*, *Müller*.

*Vitrea crystallina*, *Müller*.

*Vitrea alliaria*, *Müller*.

*Zonitoides nitidus*, *Müller*.

*Arion ater*, *Linné*.

*Arion subfuscus*, *Draparnaud*.

*Pyramidula rotundata*, *Müller*.

*Hygromia hispida*, *Linné*.

*Hygromia rufescens*, *Pennant*.

*Vallonia excentrica*, *Sterki*.

*Helix nemoralis*, *Linné*.

*Cochlicopa lubrica*, *Müller*.

*Carychium minimum*, *Müller*.

*Arion ater* was a very dark form. The heathland on these moors yielded *Arion subfuscus*, *Hyalinia alliaria*, and *Pyramidulata rotundata*. The peat-moors must be a very dreary region in winter time. The moors in some parts are often under water in flood time, the inhabitants then get about in curious flat-bottomed boats or punts, and are sometimes compelled to enter their homes through the upper windows !

The monotony of the coast-line of the Levels is relieved in the neighbourhood of Weston-super-Mare by rocky headlands of Carboniferous Limestone. On the most imposing of these, viz. Brean Down, I found the following molluscs :

*Agriolimax agrestis*, *Linné*.

*Vitrea crystallina*, *Müller*.

*Vitrea cellaria*, Müller.

*Vitrea nitidula*, Draparnaud.

\**Punctum pygmæum*, Draparnaud.

*Pyramidula rupestris*, Draparnaud.

*Pyramidula rotundata*, Müller.

\**Helicella virgata*, da Costa.

\**Helicella caperata*, Montagu.

*Helicella barbara*, Linné.

*Hygromia hispida*, Linné.

\**Hygromia rufescens*, Pennant

\**Vallonia pulchella*, Müller.

*Vallonia excentrica*, Sterki.

*Helicigona lapicida*, Linné.

\**Helix aspersa*, Müller.

\**Helix nemoralis*, Linné.

*Ena obscura*, Müller.

\**Jaminia cylindracea*, da Costa.

\**Jaminia muscorum*, Linné.

*Clausilia bidentata*, Ström.

The comparison of the molluscan fauna of Brean Down with that of the islets known as the Steep Holm and the Flat Holm is of interest, because the islets are of the same geological formation (Carboniferous Limestone), and were at one time connected with the peninsula of Brean Down, which may also be termed an island of limestone. The species marked with an asterisk in the above list have been noted by Mr. Francis Knight as occurring on the Holms, with "*Hyalinia* several species," (presumably the three species of *Vitrea* given above), also *Pupa secale*, Draparnaud; *Clausilia laminata*, Montagu; and *Pomatias elegans*, Müller; a trio I failed to note on Brean Down, but which doubtless occur there. The holocene deposit on Brean Down has been already alluded to (p. xvi).

## II. THE UPLAND AREA.

The region of deep marls and clays, limestones and sand-



stones. The recent deposits are very scanty, consisting chiefly of alluvium on the margins of rivers and streams. The soils of this area do not shew such a marked diversity of vegetation as one might expect. They differ, however, in one particular, a very important one in connection with this paper, in the presence of large woods of oak, ash, and oak-hazel. Ash woods occur chiefly on the limestones, oak on the sandstones, and oak-hazel on the deep marls and clays. There are no such woods on the Levels, only plantations of recent origin.

#### A. THE DEEP MARLS AND CLAYS.

The deep marls and clays consist of large tracts of New Red (Keuper) Marl at the foot of the Carboniferous Limestone hills, about Taunton and Wellington, and the uplands bordering the Bridgwater Levels; of Lias, the northern slopes of the Polden Hills are Lower Lias, the Middle and Upper Lias occupy the country about Ditchat, West Pennard, Butleigh, and Street. The Bradford Clay, Fuller's Earth, and Oxford Clay are exposed in the eastern uplands.

There are extensive oak-hazel woods in the Butleigh and Copleigh districts. On the margins of these woods we find in association with *Primula vulgaris*, Huds; *Spiræa ulmaria*, Linné; *Ranunculus ficaria*, Linné, and other hedgerow plants:

**Hygromia rufescens**, Pennant (dominant).

**Agriolimax agrestis**, Linné.

**Arion ater**, Férussac.

**Vitrea nitidula**, Draparnaud.

**Helix nemoralis**, Linné.

**Cochlicopa lubrica**, Müller.

In the deeper parts of the woods we find, under sticks amongst such plants as *Mercurialis perennis*, Linné; *Nepeta hederacea*, Trev.; and *Euphorbia amygdaloides*, Linné:

**Limax maximus**, Linné, associated with

**Vitrina pellucida**, Müller.

*Euconulus fulvus*, Müller.

*Agriolimax agrestis*, Linné.

*Sphyradium edentulum*, *Draparnaud* (= *Vertigo edentula*).

*Pyramidula rotundata*, Müller.

*Clausilia bidentata*, Ström.

*Carychium minimum*, Müller.

The characteristic species in the apple orchards is *Balea perversa*, Linné, which occurs on the moss-clad trunks of old trees, often in company with *Clausilia bidentata*, Ström.

The open hedgerows contain the following association :

*Hygromia rufescens*, Pennant (dominant).

*Agriolimax agrestis*, Linné.

*Arion ater*, Linné.

*Arion hortensis*, Férussac.

*Helicigona arbustorum* (uncommon).

*Helix aspersa*, Müller.

*Helix hortensis*, Müller.

All the members of this association shew a marked predilection for dead hawthorn leaves, and dead vegetation of any kind. *H. arbustorum* is of restricted range, occurring only in damp spots, and often in association with ivy (*Hedera helix*, Linné).

In damp meadows on heavy clay we find the following association :

*Agriolimax agrestis*, Linné (dominant).

*Arion ater*, Linné.

*Arion hortensis*, Férussac.

*Arion fasciatus*, Nilsson.

*Vallonia excentrica*, Sterki (rarely).

*Vertigo pygmæa*, *Draparnaud* (rarely).

*Ag. agrestis* often occurs in extraordinary abundance, and with the three *Arion* may be noted during hay harvest beneath grass which has been cut for three or four days.

## B. THE LIMESTONES.

The limestones consist chiefly of large tracts of Carboniferous Limestone on the Mendips (the slopes of which are generally flanked by Dolomitic Conglomerate), and the outcrops of Bath Oolite, Coral Rag, Inferior Oolite, Fuller's Earth Rock, Forest Marble, and Cornbrash in the east of the county, well shown about Bath and Wincanton. Woods and natural copses of ash are very abundant on the slopes of the hills. "The ultimate or stable plant association on all the limestones of Somerset appears to be an ash wood" (Moss). With the ash are associated oak, beech, and horse chestnut, in many woods there is a dense undergrowth of hazel, and oak, beech, and alder border the streams. The characteristic ground vegetation of these woods is large patches of Dog's Mercury (*Mercurialis perennis*, L.) and Wood Garlic (*Allium ursinum*, Linné). Comparative lists of the ground plants of Somerset woodlands may be consulted in Dr. Moss's paper.

In the upper woods we have :

*Clausilia bidentata*, Ström. (dominant) : associated with

*Limax arborum*, Bouchard-Chantereaux.

*Vitrina pellucida*, Müller.

*Vitrea cellaria*, Müller.

*Vitrea alliaria*, Miller.

*Vitrea pura*, Alder.

*Pyramidula rotundata*, Müller.

*Helix fusca*, Montagu (rare).

*Helix nemoralis*, Linné.

*Jaminia cylindracea*, da Costa.

*Cochlicopa lubrica*, Müller.

In the lower woods (moist) we have :

*Clausilia bidentata*, Ström.

*Vitrina pellucida*, Müller.

*Vitrea cellaria*, Müller.

*Vitrea alliaria*, Miller.

*Euconulus fulvus*, Müller.

*Pyramidula rotundata*, Müller.

*Helix granulata*, Alder (rare).

*Helicigona arbustorum* Linné (local).

*Carychium minimum*, Müller.

The characteristic association of hazel and ash copses and hedges is the following :

*Pomatia elegans*, Müller (dominant) : with

*Vitrina pellucida*, Müller.

*Vitrea cellaria*, Müller.

*Vitrea nitidula*, Draparnaud.

*Hygromia rufescens*, Pennant.

*Helix hortensis*, Müller.

*Ena obscura*, Müller.

*Pomatias elegans* (= *Cyclostoma elegans*), our only operculate land snail, abhors damp situations, and is almost invariably found beneath hazel on dry calcareous soils.

In the ash copses of spontaneous growth on the dry slopes of the limestone hills we find :

*Ena montana*, Draparnaud ; associated with

*Helix nemoralis*, Linné (dominant).

*Pyramidula rupestris*, Draparnaud.

*Hygromia rufescens*, Pennant.

*Helix aspersa*, Müller.

*Jaminia secale*, Draparnaud.

*Jaminia cylindracea*, da Costa.

*Clausilia laminata*, Montagu.

*Clausilia bidentata*, Ström.

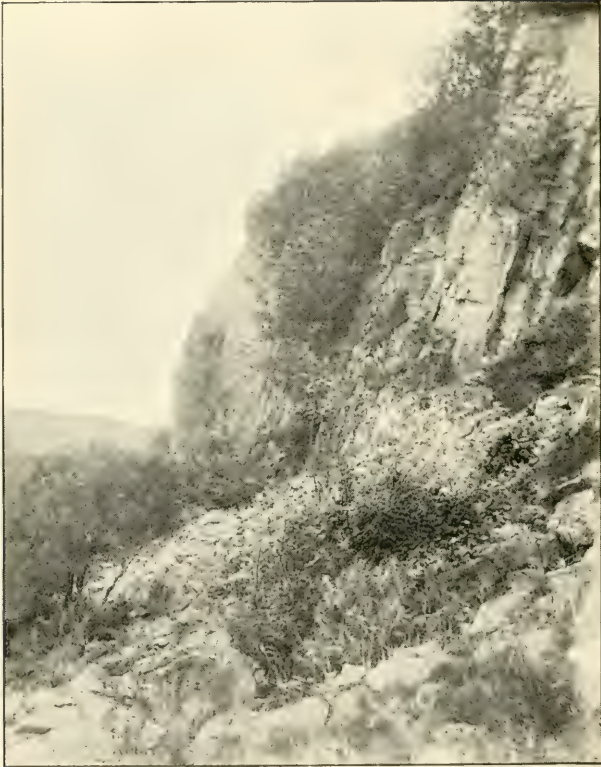
*Clausilia rolpheii*, Leach.

*Ena montana* is the characteristic species of the limestone hills of the south of England. It does not occur in the north. A reference to the Somerset records shews that it is by no means a common species in the county. *Jaminia secale* is another species with a restricted British range, being chiefly





PLATE II.



ASH COPSE AND LIMESTONE CLIFF.

In such situations the local *Ena montana*, *Draparnaud* may be found

*From a photograph by Mr. W. B. Crump, Halifax.*

confined to the limestones of the west. Plate II shews a typical haunt of *E. montana* and associated species. *Clausilia rolfii* (a very rare species) is associated with it on Creech Hill near Milton Clevedon. I have noted the same association in the ash-hazel copses of Sussex. *H. nemoralis* is usually associated with the common gorse (*Ulex europæa*, *Linne'*), and is fond of climbing the ash saplings; very rarely we find *H. hortensis* with it in the woods, but they are frequently found together in hedge-banks.

Before passing on to the consideration of the mollusca of the cultivated areas on the limestone, we may note an association which occurs on the natural pastures and heath pastures of the uncultivated grass-lands. On these the soil is usually very shallow, ant-heaps ("emmet's butts" in the present day vernacular, *A.S. Emetes'-byht*) abound. Dr. Moss observes there is frequent and rapid transition of the two types, and that "even on the natural pasture heather and heath plants are frequently found on old ant heaps . . . . Possibly the formic acid of the ants is inhibitive to the growth of the limestone plants: and thus the heath plants, to whom a sour soil is by no means fatal, are enabled to survive."

On the natural pasture we find:

**Agriolimax agrestis**, *Linne'*.

**Vitrea nitidula**, *Draparnaud*.

**Pyramidula rotundata**, *Müller*.

**Helix nemoralis**, *Linne'*.

**Helicella virgata**, *da Costa*.

**Helicella caperata**, *Montagu*.

**Jaminia cylindracea**, *da Costa*.

None in great abundance, and *H. nemoralis* usually with Gorse (*Ulex europæa*). The association appears to be intermediate between that of the upper woods and the open cultivated pastures. On the heath pasture we have

**Pyramidula rotundata**, *Müller* (dominant): associated with

**Limax arborum**, *Bouchard-Chantereaux*.

*Agriolimax agrestis*, Linné.

*Vitrea alliaria*, Miller.

*Walls.* Hedgerows are often replaced by walls on the Carboniferous Limestone. On these we find

*Pyramidula rupestris*, *Draparnaud* (dominant) : associated with *Helicigona lapicida*, Linné.

*Hygromia hispida*, Linné.

*Hygromia rufescens*, Pennant.

*Helicella caperata*, Montagu.

*Jaminia cylindracea*, *da Costa*.

The usual association on old walls in the vicinity of towns, villages, and isolated farms on the Oolite is :

*Helicigona lapicida*, Linné (dominant) : with

*Helicella caperata*, Montagu.

*Hygromia hispida*, Linné.

*Hygromia rufescens*, Pennant.

*Helix aspersa*, Müller.

*Vallonia pulchella*, Müller.

*Vallonia costata*, Müller.

*Jaminia cylindracea*, *da Costa*.

The two species of *Vallonia*, with *J. cylindracea*, haunt the edges of the flat slabs which frequently cap the walls. *J. cylindracea* sometimes occurs in almost incredible numbers amongst the roots of *Festuca rigida*, Knuth, *Festuca ovina*, Linné, *Poa pratensis*, Linné, and other wall-loving grasses. Wherever the Red Valerian (*Kentranthus ruber*, D.C.) occurs, we find *H. aspersa* in large numbers. *H. rufescens* and *H. hispida* appear to be more particularly associated with ivy.

In permanent pastures we find the following association :

*Agriolimax agrestis*, Linné.

*Vitrea nitidula*, *Draparnaud*.

*Vitrea cellaria*, Müller.

*Helicella virgata*, *da Costa*.

*Helicella itala*, Linné.



*Helicella caperata*, Montagu.

*Hygromia rufescens*, Pennant.

*Hygromia hispida*, Linné.

*Cochlicopa lubrica*, Müller.

*H. virgata*, *H. itala*, and *H. caperata* are the dominant species on dry upland calcareous pastures. Forms with well developed dark bands predominate. It is supposed that this type of banding is protective, serving to make the shell easily visible to sheep. Indistinctly marked and light unicolorous forms are not so easily seen, and are often eaten.

*Cæcilioides acicula*, Müller, a truly subterranean species, respecting the habits of which little is known, is abundant in some districts on the Oolite, judging from the numerous shells washed from the soil during heavy storms. I have never found it alive. It is probably gregarious; after floods I have seen in quarries about Wincanton, the high-water mark indicated on the side of the quarry by a narrow white zone of thousands of dead shells. Its occurrence in burial places has been noted in many parts of Britain, including Somerset (p. xvi).

### C. THE SANDSTONES.

The sandstone areas of Somerset occupy much of the highest land in the county, and comprise, geologically, the Devonian with Old Red Sandstone, Coal Measures, Upper Greensand, and Chalk. The Devonian tracts of Exmoor culminate in Dunkery Beacon, 1,707ft., the highest point in the county. The Old Red Sandstone is exposed on the top of Mendip, highest point Blackdown, 1,008ft., and in certain other localities in the north-west, where the Carboniferous rocks have been worn away. The Upper Greensand occurs in the eastern part of the county, bordering on Stourton and Kilmington (Wilts), the highest point is King Alfred's Tower, 850ft. There are small chalk areas in the neighbourhood of Crewkerne. Dr. Moss is of opinion "that the differences between the vege-

tation of the sandstones and that of the limestones depend more upon the presence or absence of humus than upon their siliceous or calcareous nature."

There are large oak woods in the neighbourhood of Pen Selwood, some of these are of ancient character, and are possibly vestiges of the ancient forest of Selwood which originally covered about 20,000 acres. In these we find :

*Clausilia bidentata*, Ström. (dominant) : associated with

*Limax maximus*, Linné.

*Limax arborum*, Bouchard-Chantereaux.

*Vitrea alliaria*, Miller.

*Arion ater*, Linné.

*Pyramidula rotundata*, Müller.

*Hygromia rufescens*, Pennant.

*Jaminia cylindracea*, da Costa.

*Cochlicopa lubrica*, Müller.

The above association is characteristic of all the oak woods on the upper sandstones : in some of the low-lying woods *Vitrea crystallina*, Müller ; *Euconulus fulvus*, Müller ; *Vertigo pygmæa*, Draparnaud ; and *Carychium minimum*, Müller, also occur, with *Agriolimax agrestis* and *Agriolimax lævis*.

In mixed woods with conifers, on the lower slopes between Dunkery Beacon and the village of Luccombe, I noted the following association :

*Limax arborum*, Bouchard-Chantereaux.

*Agriolimax agrestis*, Linné.

*Agriolimax lævis*, Müller.

*Arion intermedius*, Norman.

*Arion hortensis*, Férussac.

*Pyramidula rotundata*, Müller.

*Helix aspersa*, Müller.

*Helix hortensis*, Müller.

*Clausilia bidentata*, Ström.

Concerning the beech woods on the sandstones in the eastern part of the county, Dr. Moss remarks "there is not a natural

beech wood of even moderate dimensions to be found in the district." He notes that some beeches to the east of Alfred's Tower are of considerable dimensions, "even here, however, the occurrence of the beeches, old as they undoubtedly are, in straight rows, suggests artificial planting." The typical molluscan association of these woods is the following :

*Clausilia laminata*, Montagu (dominant): with

*Limax arborum*, Bouchard-Chantereaux.

*Vitrina pellucida*, Müller.

*Vitrea alliaria*, Miller.

*Vitrea nitidula*, Draparnaud.

*Vitrea pura*, Alder.

*Hygromia hispida*, Linné.

*Hygromia rufescens*, Pennant.

*Cochlicopa lubrica*, Müller.

*Ena obscura*, Müller (abundant).

*Clausilia bidentata*, Ström. (abundant).

There is a very meagre molluscan fauna on the uncultivated grass-lands and heath pastures of the whole of the sandstone area. The upland heath moors at Blackdown, on the Quantocks, and on Exmoor, are large tracts, with the three species of heather, *Calluna vulgaris*, Hull; *Erica tetralix*, Linné; and *Erica cinerea*, Linné, the dominant plants; *Vaccinium myrtillus*, Linné; *Molinia caerulea*, Moench; *Agrostis*, spp.; and *Pteris aquilina*, Linné, the sub-dominants.

Ling and bracken are apparently tenanted only by

*Hyalinia alliaria*, Miller.

*Arion subfuscus*, Draparnaud.

*Pyramidula rotundata*, Müller,

a trio always associated with sandstone heaths. With these species we find on Exmoor *Arion intermedius*, Norman, and *Limax arborum*, Bouchard-Chantereaux, the latter, however, occurring chiefly on the lower slopes in the vicinity of the oak woods.

The fluviatile mollusca of the Upland Area must now be considered.

The Swan Mussel, *Anodonta cygnæa*, *Linné*, is frequent in the majority of the larger ponds, canals, and rivers, where it prefers a muddy bottom. It is of gregarious habit, and frequently attains considerable dimensions. It is the largest of our freshwater bivalved molluscs, safe from foes (excepting a few internal parasites) in its deep-water home, it probably lives to a great age. The canals teem with molluscan life. In the open water we find :

*Anodonta cygnæa*, *Linné* ; associated with

*Limnæa peregra*, *Müller*.

*Valvata piscinalis*, *Müller*.

*Pisidium amnicum*, *Müller*.

*Sphærium corneum*, *Linné* (local).

*Sphærium lacustre*, *Müller*.

*Neritina fluviatilis*, *Linné* (on rocks).

*Dreissensia polymorpha*, *Pallas* (local).

In the reed-belt of the canals, rivers, and ponds, the association is the same as that of the reed-belt of the rhines on the Levels (see p. xxviii); the associations of the respective margins are also identical.

*Anodonta cygnæa* is absent from some of the rivers, and *Neritina fluviatilis* is to be found only on stones in slow-running waters.

The shallow non-calcareous streams on the heathy sandstones, *e.g.* Penselwood, yield :

*Planorbis albus*, *Müller*.

*Ancylus fluviatilis*, *Müller*.

*Limnæa peregra*, *Müller*.

*Pisidium pusillum*, *Gmelin*.

The cattle ponds on the grass-lands yield *Sphærium lacustre*, *Müller*, a highly specialised species with closely fitting valves, able to retain life for a long time in summer drought, buried in the moist clay of ponds that are quite dried up on the surface.



## RECORDS OF SOMERSET MOLLUSCA.

THE arrangement here followed is that of the latest lists published by the Conchological Society. The great changes in nomenclature which have recently taken place necessitate the inclusion of numerous synonyms.

The exclamation mark indicates that the species (or variety) has been seen by the author in the locality mentioned.

All records of varieties are included, but the recorded stations of species, which there is every reason to think are generally distributed in the county, have been omitted.

Collections of Somerset shells in the Museums at Bristol, Bath, Sexey's School, Bruton, and Haslemere (Surrey), have been examined during the preparation of these records, also private collections formed by the late Mr. Kenneth McKean (Bath), and Mr. William Herridge (Torquay).

### LAND AND FRESH-WATER.

The latest list of British non-marine mollusca published by the Conchological Society enumerates 170 species (inclusive of brackish-water forms). Ten of these are aliens, and sixteen occur only in a fossil state in Post-Pliocene deposits, leaving a total of 144 native species living in Britain at the present time. The following pages contain records of no less than 122 species, a very high percentage indeed. Ninety-five are recorded from the southern, and 121 from the northern division. The only species recorded from South Somerset alone is *Amphipeplea glutinosa*. In all probability *Hygromia revelata*, *Férussac*; *Vertigo moulinsiana*, *Dupuy*; *Vertigo substriata*, *Jeffreys*; and *Segmentina nitida*, *Müller*, will be added to the list within the next few years, all have been found in neighbouring counties.

### TESTACELLIDÆ.

#### TESTACELLA MAUGEI, *Férussac*.

According to Norman this species was observed in nursery grounds at Clifton (Glos.) in 1814. "From that time to the present (*i.e.* 1860) it has thriven and propagated freely in its

original locality, and has likewise been introduced with plants into many other gardens in the West of England." Its discovery in Messrs. Miller and Sweet's nursery at Clifton (now Garraway's) by Mr. T. Drummond was the first British record. Mr. J. De C. Sowerby thought it might have been imported along with plants from Teneriffe or elsewhere, but it is now held that the three species of *Testacella* which occur in these Islands are indigenous.

It has been lately recorded by Santer Kennard from a Holocene rain-wash at Porlock Weir.

*North.*

Long Ashton Vicarage. Plentiful; *Mrs. Falloon*. There are specimens from this locality in the Bristol Museum.

Brislington; *A. M. Norman*.

Bath; *Jenyns Museum coll.*

Clevedon; *A. M. Norman*.

Garden near Axbridge; *Miss H. J. Taylor*.

Axbridge; *Miss Efoulkes Taylor*.

Castle Cary; *W. Macmillan*.

Greinton. Abundant; *W. S. Clark*.

Street; *W. S. Clark*.

Weston-super-Mare; *W. Robinson*.

*South.*

Taunton; *A. M. Norman*.

Garden at Taunton; *W. Gynnell*.

Bridgwater. Abundant; *H. Corder*.

TESTACELLA HALIOTIDEA, *Draparnaud*.

Much rarer than the preceding species. Norman apparently doubted its occurrence in the county, "In all instances in which we have had the opportunity of examining the specimens, the species has proved to be *T. maugei*."

*North.*

Weston-super-Mare; *W. Robinson*.

Beckington; *H. Franklin Parsons*. Recorded by W. Mark Webb in "Journ. Malacology," 1897, p. 49.

*South.*

Bridgwater; *B. B. Woodward*.

Gardens, Taunton; *Tate*.

TESTACELLA SCUTULUM, *Sowerby*.

The only record that I can find of this species is that given in Leipner's Bristol List, 1875, viz., Leigh Woods, rare,

T. G. Ponton, 1862. (The record from Taunton in Vol. VII of *The Naturalist* was incorrect; Norman pointed out that the species was *T. maugei*). Scutulum has been found in Dorset, and is probably widely distributed in N. Somerset. All members of the genus are of subterranean habit, and do not come up to feed until late at night, hence are often overlooked. Many of the records have been made in the spring and autumn of very wet years, when the excessive saturation of the soil has driven them to the surface by day.

(Since the above was written Mr. J. Ponsonby has found *T. scutulum* in a garden at Brympton, near Yeovil).

## LIMACIDÆ.

LIMAX MAXIMUS, *Linne*.

Generally distributed.

Concerning its variation, Norman observed that "the striped and spotted varieties are common. We met with a variety in Cleeve Coombe remarkably distinct, and we believe hitherto unrecorded. It was altogether pitchy black, without spots or markings of any kind, and fully six inches long."

Var. *cinereo-niger*, *Wolf*. Some authorities give it a specific rank. Norman's Cleeve Coombe variety is described in Taylor's *Mon. Brit. L. and F. Moll.*, II, 68, as *L. cinereo-niger*, var. *maura*. It is also recorded from Horner by F. J. Partridge.

Weston district; *F. A. Knight*.

Var. *ferrussaci*, *Moquin-Tandon*.

Bridgwater; *W. Vinson*.

Holton!

Var. *fasciata*, *Moquin-Tandon*.

Bratton St. Maur!

Var. *maculata*, *Picard*. (Norman's spotted variety).

Bratton St. Maur. Abundant!

Rimpton!

West Pennard!

Bath; *Mrs. Oldroyd*.

Hatch Beauchamp; *E. Wake-Bowell*.

Var. *cellaria*, *D'Argenville*. (Norman's striped variety).

Bratton St. Maur. Common!

Rimpton!

*L. FLAVUS*, *Linné*.

Apparently rare, but is probably much more frequent than the records would lead one to suppose.

*North.*

Bristol and Bath ; *Captain Brown*.

Bath ; *C. J. Waterfall*.

Rimpton !

Bridgwater ; *W. Vinson*.

Weston district ; *F. A. Knight*.

Var. *suffusa*, *Roebuck*.

Bath ; *C. J. Waterfall*.

*L. ARBORUM*, *Bouchard-Chantereaux* (= *L. marginatus*, *Müller*).

Widely but not generally distributed.

*North.*

On trees and rocks in Goblin, Cleeve, and Brockley Coombes, and some of the glens running up into the Mendips, near Wells ; *A. M. Norman*.

General in the Bristol district ; *Cundall*.

Coombe Down, Bath ; *Mrs. Oldroyd*.

Lily Wood, Bratton St. Maur ; Milton Clevedon !

Weston district ; *F. A. Knight*.

*South.*

Very common in the woods around Hatch Park, near Taunton ; *E. Wake-Bowell*.

Porlock ; *L. E. Adams*.

Dulverton ; *H. Watson*.

Luccombe !

*AGRIOLIMAX AGRESTIS*, *Linné*.

Generally distributed. The most abundant of our slugs, often a great pest in gardens.

Var. *sylvatica*, *Moquin-Tandon*.

Bath ; *C. J. Waterfall*.

Bratton St. Maur and Wincanton district, frequent !

Var. *punctata*, *Picard*.

Hatch Beauchamp ; *E. Wake-Bowell*.

Var. *nigra*, *Morelet*.

Bratton St. Maur ; Glastonbury ! Under damp wood near to buildings and sheds.

Var. *lilacina*, *Moquin-Tandon*.

Bridgwater ; *W. Vinson*.



Var. *tristis*, *Moquin-Tandon*.

Bratton St. Maur! In meadows, under sticks that had lain for a long time on the ground.

A. LÆVIS, *Müller*.

Probably not so uncommon as the lack of records would indicate.

*North.*

Among heaps of stones by the side of the lane which runs parallel with the cliff from Walton to Portishead, and among decaying vegetation by the side of a rhine in Portishead Moor; *Norman*.

Coombe Down, Bath; *Mrs. Oldroyd*.

Under logs and bark in damp situations, Bratton St. Maur!

*South.*

Not uncommon by a ditch, Hatch Beauchamp; *E. Wake-Bowell*.

Luccombe!

MILAX SOWERBYI, *Férussac* (= *Amalia sowerbyi*, *Férussac*, and *Amalia marginata*, *Müller*).

Easily known by the prominent pale keel, it usually occurs in gardens, and the paucity of records probably arises from its subterranean habit; it usually hides by day in worm burrows.

*North.*

Bath; *Mrs. Oldroyd*.

Clevedon, in gardens, and in the copse between the upper Clevedon and the beach; *Norman*.

Weston district; *F. A. Knight*.

Abundant in gardens in Hill Road, Weston-super-Mare!

*South.*

Somewhat sparingly at Hatch Beauchamp, more common at Beer Crowcombe; *E. Wake-Bowell*.

Dulverton; *H. Watson*.

Var. *nigrescens*, *Roebuck*.

Bridgwater; *W. Vinson*.

M. GAGATES, *Draparnaud*.

Also chiefly subterranean, coming forth to feed at night.

*North.*

Specimens in the British Museum are labelled "Bath, J. E. Daniel."

*South.*

Allotment gardens, near canal and gasworks, Bridgwater;  
*W. Vinson.*

Var. *plumbea*, *Moquin-Tandon.*

Specimens in the British Museum labelled "Bath, J. E. Daniel" (*T. D. A. Cockerell in Ann. and Mag. Nat. Hist.*, 1891, p. 330).

## ZONITIDÆ.

VITRINA PELLUCIDA, *Müller.*

"Widely distributed but not abundant"; *Norman.*

*North.*

Common in the Wincanton district and around Milton Clevedon!

There are specimens in the Jenyns coll., Bath Museum, and from Long Ashton in the Bristol Museum.

Rimpton! Bratton St. Maur!

Weston district; *F. A. Knight.*

Clevedon; *Miss L. C. Jones in Leipner's List.*

Plantations on the peat moors at Shapwick, etc.!

Amongst moss in the dune hollows about Berrow and Burnham!

*South.*

Hatch Beauchamp, near Taunton: not very common;  
*E. Wake-Bowell.*

Brympton; *J. Ponsonby.*

Dulverton; *H. Watson.*

Wellington; *W. Gygell.*

VITREA CRYSTALLINA, *Müller* (= *Hyalinia crystallina*, *Westerlund*; and *Zonites crystallinus*, *Gray*).

Generally distributed amidst moss and decaying leaves and sticks in damp situations. Santer Kennard reports its occurrence in a rainwash of probably no great age at Alcombe, near Minehead. There are typical specimens in the museums of Bath and Bristol.

Var. *complanata*, *Jeffreys.*

Leigh Woods, Bristol; *Jeffreys.*

Var. *contracta*, *Westerlund.*

Near Minehead; *C. Oldham.*

VITREA LUCIDA, *Draparnaud* (= *Hyalinia draparnaldi*, *Beck*).

Apparently rare; possibly often confused with *V. cellaria*. It is sometimes a little difficult to distinguish between the shells of these species, but the deep slaty-blue colour of the animal, extending even to the side areas of the sole, serves at once to distinguish *V. lucida* from *V. cellaria*.

*North.*

Abundant in gardens at Hill Road, Weston-super-Mare!

*South.*

Mr. John Taylor received one specimen from Mr. Ponsonby which was presumably taken at Brympton.

Var. *albina*, *Moquin-Tandon*. Specimens in the Bristol Museum are said to have been taken in Somerset.

VITREA CELLARIA, *Müller* (= *Hyalinia cellaria*, *Westerlund*, and *Zonites cellarius*, *Moquin-Tandon*).

Generally distributed in woods and open country, also in the vicinity of human habitations. Animal pale-grey. I have observed it in a Holocene deposit on Brean Down, Weston-super-mare.

Var. *compacta*, *Jeffreys*.

A somewhat flatter form, found by Mr. Hugh Watson at Dulverton, is recorded in *Taylor's Monograph*, Vol. II, p. 37. This variety is intermediate between *V. lucida* and typical *V. cellaria*, having the shell of the former and the anatomical structure of the latter.

Var. *albina*, *Moquin-Tandon*.

Bath; *Mrs. Oldroyd*.

Holbrooke, Bratton St. Maur!

Dulverton; *H. Watson*.

VITREA ROGERSI, *B. B. Woodward* (= *Hyalinia helvetica*, *Auctt.* and *Zonites glaber*, *Jeffreys*).

Apparently a very local and rare species: it may be assumed, however, that it occurs in the recesses of the majority of the larger woods in the county.

*North.*

Creech Hill, near Bruton!

Weston district; *F. A. Knight*.

Weston wood!

Bath; *Kenneth McKean*.

*South.*

Hatch Beauchamp, a small form ; *E. Wake-Bowell*.  
 Minehead ; *L. E. Adams*.  
 Near Taunton !

VITREA ALLIARIA, *Miller* (= *Hyalinia alliaria*, *Miller*, and  
*Zonites alliarius*, *Gray's Turton's Manual*, p. 168).

This species was first identified by Mr. Miller of Bristol, and described by him in *Ann. Phil. N.S. iii*, p. 379. It is widely distributed, and is always more frequently met with on the Greensand than any other representative of the family.

*North.*

Common in woods, on hedgebanks, and under stones ;  
*Norman*.

Leigh Woods and Portishead ; *Cundall*.

Combe Down, Bath ; *Mrs. Oldroyd*. There are examples in the Jenyns coll. in the Bath Museum.

Bratton St. Maur, Wincanton, and Creech Hill, near Bruton !

Weston district ; *F. A. Knight*.

Plantations about Shapwick !

*South.*

Brympton ; *J. Ponsonby*.

Dulverton ; *H. Watson*.

Dunkery Beacon !

Var. *viridula*, *Jeffreys*.

Gwyn Jeffreys remarks that Norman found it in Somerset, but does not give locality.

Near Minehead ; *L. E. Adams* and *C. Oldham*.

VITREA NITIDULA, *Draparnaud* (= *Hyalinia nitidula*, *Draparnaud*, and *Zonites nitidulus*, *Gray*).

Generally distributed, frequent under stones and sticks in hedges and woods.

Var. *helmi*, *Alder*.

Abbots Leigh ; *Bristol Museum Coll.*

Penselwood !

Miss F. M. Hele found a form in Combe Dingle, near Bristol, which Taylor has described in his *Monograph* as var. *virens-albida*, *Michaud*, sub-var. *opaca* (= *helmi*, with the last whorl much expanded).

Var. *nitens*, *Michaud*.

Dulverton ; *H. Watson*.



VITREA PURA, Alder (= *Hyalinia pura*, *Westerlund*, and *Zonites purus*, *Jeffreys*).

Generally distributed. Gregarious amongst leaves, moss, etc., in hedges and woods.

There are two forms of this species, white and horn-coloured, and both are equally common. It may therefore be considered a dimorphic species, but many authorities consider one form alone as the type. Those who deem the colourless form the type, allude to the horn-coloured one as var. *nitidosa*, *Gray*; if the latter is considered typical, then the former becomes var. *margaritacea*, *Jeffreys*.

VITREA RADIATULA, Alder (= *Hyalinia radiatula*, Alder, and *Zonites radiatulus*, *Gray*).

Apparently uncommon.

*North.*

“At roots of stunted grass, growing in the crevices of limestone rocks on Elson Hill, and in similar situations on the eastern scarp of Clevedon Hill”; *Norman*.

Weston district; *F. A. Knight*.

Leigh Woods, Bristol; *Cundall*.

Bath; *Jenyns Coll. Bath Museum*.

Rimpton!

*South.*

Brympton, Yeovil, uncommon; *John Ponsonby*.

Var. *viridiscenti-alba*, *Jeffreys*.

Brympton; *J. Ponsonby*.

ZONITOIDES NITIDUS, Müller (= *Hyalinia nitida* *Westerlund* and *Zonites lucidus* *Gray's Turton*).

Uncommon. Gregarious on the borders of ditches, rhines, rivers and canals.

*North.*

“Damp situations. Under stones on the grass in Kenn and Portishead Moors;” *Norman*.

Weston-super-Mare; *Crotch*.

Weston district; *F. A. Knight*.

Rejectamenta of a stream at Shepton Montague, near Bruton!

Glastonbury Fens; *F. Townsend*, 1852, *Haslemere Mus. Coll.*

Monkton Combe, Bath; *Kenneth McKean*.

Plantations on the peat moors at Shapwick, etc!

*South.*

Brympton, a damp spot in the Park ; *J. Ponsonby*.

*ZONITOIDES EXCAVATUS*, *Bean* (= *Hyalinia excavata* *Westerlund* and *Zonites excavatus* *Gray*).

Under decaying wood and leaves often in company with the ubiquitous *Pyramidula rotundata*. Taylor remarks of it (*Monograph*, III, p. 137), "a species that has probably been misunderstood and overlooked on the continent, as it is very unlikely to be so strictly confined to the limits of the British Isles, as its recorded distribution would indicate." The only extra British localities at present known are Eschen, near Antwerp, and Flensburg in Schleswig. Distribution sporadic in the British Isles. It is rare in Somerset.

*North.*

Pylle ; *F. N. Townsend*, 1856, *Haslemere Mus. Coll.*

Under loose stones outside the camp on Worlebury,

Weston-super-Mare ; *F. A. Knight*.

Weston Wood !

*South.*

Dulverton ; *H. Watson*.

Var. *vitrina*, *Férussac*.

Dulverton ; *Hugh Watson*.

*EUCONULUS FULVUS*, *Müller* (= *Hyalinia fulva*, *Mörch*, and *Zonites fulvus*, *Jeffreys*).

Generally distributed, chiefly found under rotting sticks in damp situations.

Var. *Mortoni*, *Jeffreys*. Recorded by Jeffreys in *British Conchology*, 1862, p. 171, from Somerset, but without locality. It is possible that the "small" specimens found by Norman on Elton Hill, Clevedon, and among rushes in Walton Moor, come under this heading.

[There may be seen in the Bath Museum a single specimen of a fossil species of *Hyalinia*, found by Mr. Moore in a bed of lias clay twelve feet in thickness, at a depth of 270 feet, in the Charter House lead mines in the Mendips. It is a minute species, less than one millimetre in diameter. Moore described it under the name of *Helix Dawsoni* in *Quar. Jour. Geol. Soc.*, 1867, p. 549, pt. xv, f. 12].

## ARIONIDÆ.

ARION ATER, *Linné*.

Generally distributed. Norman remarks that "on the low grounds and in damp situations this *Arion* is always black; in drier situations, hills, and woods, it varies greatly in colour." The var. *aterrima*, *Taylor*, the whole body uniformly black, which is usually found in mountainous regions, also occurs sporadically at low levels. I found two specimens in one of the heath plantations near Shapwick Station. In typical *A. ater* the medium area of the footsole is paler than the rest.

Var. *rufa*, *Linné*.

Bristol; *W. D. Roebuck*.

Bath; *C. J. Waterfall*.

Bratton St. Maur and Bruton district!

Dulverton; *H. Watson*.

Var. *brunnea*, *Roebuck* (= *castanea*, *Dum. and Mort.*)

Bath; *C. J. Waterfall*.

Bridgwater, in allotment gardens; *W. Vinson*.

Dulverton; *H. Watson*.

Bratton St. Maur and Wincanton district generally!

Var. *plumbea*, *Roebuck*.

Rimpton!

Bridgwater; *W. Vinson*.

Dulverton; *H. Watson*.

Var. *reticulata*, *Roebuck*.

One example from Hatch Beauchamp; *W. Wake-Bowell*.

Var. *rubra*, *Baudon*.

Rimpton!

Var. *alba*, *Linné*.

Gardens at the foot of West Hill, Wincanton; *W. Herridge*.

In a lane at Stoke Trister, near Wincanton!

In my paper in the *Journal of Conchology* I alluded to a beautiful variety found in a lane at Stoke Trister, near Wincanton. Ground colour yellowish white, lineoles vivid orange, a broad black band extending the whole length of the back, mouth and tentacles also black. Foot pale. This large and very showy form which apparently comes under Roebuck's variety *albolateralis* (see *J. C.*, 1883, p. 39, and Taylor's *Monograph*, ii, p. 185) was also observed at Dulverton by Mr. Hugh

Watson. Taylor also describes a variety *succinea*, Müller, animal yellowish with reddish-orange foot-fringe; this form was taken by Mr. W. Vinson at Bridgwater. Neither *albolateralis* nor *succinea* are mentioned in the latest edition of the Conchological Society's list of British non-marine Mollusca.

ARION SUBFUSCUS, *Draparnaud*.

Frequent in the woods and hedgerows in the hilly districts in the eastern part of the county. A characteristic species on the Neocomian sands.

*North.*

Penselwood! Milton Clevedon! Bratton St. Maur!  
Frequent about Wincanton!  
Woods at Butleigh near Glastonbury!  
Rimpton!  
Plantations on the turf moors at Shapwick, etc.!

*South.*

Hatch Beauchamp, Taunton. Under stones beneath *Pinus-sylvestris*; *E. Wake-Bowell*. Near Taunton!  
Bridgwater; *W. Vinson*.  
Dulverton; *Hugh Watson*.

Var. *brunnea*, *Lehmann*.  
Bridgwater; *W. Vinson*.

The var. *Krynickyi*, *Kaleniczenko*, sub-var. *griseus Colinge*, which I found feeding on gorse broom on Bratton Hill, near Wincanton (J.C., 1899), is var. *succinea Bouillet*, sub-var. *Krynickyi* of Taylor's *Monograph*, ii, 202.

ARION INTERMEDIUS, *Normand* (= *Arion minimus*, *Simroth*).

A small species, abundantly distinct in the spiked tubercles covering the body, hence sometimes known as the hedgehog slug. In spite of this very distinctive peculiarity it is very often mistaken for young *A. ater* or pale forms of *Arion hortensis*, and for that reason I do not think it is so uncommon in the county as the paucity of records would lead one to suppose.

*North.*

Clevedon; *E. J. Lowe*.  
Bath; *E. J. Lowe*.  
Rimpton!  
Wincanton district, common!  
West Pennard, Glastonbury!

*South.*

Dulverton ; *H. Watson*.

Minehead and Taunton ; *E. J. Lowe*.

Common at Porlock, Minehead and Watchet ; *L. E. Adams*.

Near Dunkery Beacon, and about Luccombe !

ARION HORTENSIS, *Férussac*.

Generally distributed. Often a great nuisance in gardens.

Var. *cærulea Collinge*. Bratton St. Maur. Frequent !

Taylor's record in *Monograph*, ii, p. 215, of var. *fasciata*, *Moquin—Tandon*, sub var. *elongata* (= *Arion elongatus Collinge*) for this county is an error. It was found at Southampton.

ARION FASCIATUS, *Nilsson* (= *A. bourguignati*, *Mabille* and *A. circumscriptus*, *Johnston*).

Though many records of this species are not forthcoming it cannot be considered rare. It is often mistaken for the preceding species, which differs however in the yellow foot-sole, etc. In *A. fasciatus* the foot-sole is always white.

*North.*

Bratton St. Maur and Wincanton district generally.

Common !

West Pennard !

Rimpton !

Turf moors at Shapwick, Edington, etc. !

*South.*

Porlock ; *L. E. Adams*.

Dulverton ; *H. Watson*.

Luccombe !

## ENDODONTIDÆ.

PUNCTUM PYGMÆUM, *Draparnaud* (= *Helix pygmæa*, *Draparnaud*).

A minute species, probably often overlooked.

*North.*

At roots of grass on Clevedon and Elton Hills ; *Norman*.

Ashley Hill, Bristol ; *Bristol Mus. Coll.*

Bath ; *Jenyn's Coll.*

Bratton St. Maur, and Wincanton district, uncommon !

Rejectamenta of river Brue, Glastonbury ; *O. Morland*.

Weston district ; *F. A. Knight*.



*South.*

Vauxhall and Brympton, Yeovil ; *J. Ponsonby*.  
 Hatch Beauchamp ; *Wake-Bowell*.  
 Wellington ; *W. Gynnell*.

SPHYRADIUM EDENTULUM, *Draparnaud* (= *Vertigo edentula*,  
*Draparnaud*).

Apparently very local, but may be suspected to have a wide distribution in damp woods. There are specimens without statement as to locality in the Jenyn Coll., Bath Museum.

*North.*

About Holbrook, near Wincanton !  
 Rejectamenta of the Cule at Burton's Mill, above Wincanton, and the gully stream at Bratton St. Maur !  
 Abundant (with *V. pygmaea*) in an old quarry in Weston Wood, and in the Brue drift ; *F. A. Knight*.

*South.*

Pitt Wood, and Brympton, Yeovil, on nettles and dead leaves, *J. Ponsonby* ; near Minehead, *Adams and Oldham*.

Var. *columella*, *G. von Martens*.

Two specimens from rejectamenta of the gully stream at Bratton !

PYRAMIDULA RUPESTRIS, *Draparnaud* (= *Helix rupestris*,  
*Draparnaud*).

Common on walls and exposed cliffs in many parts of the county. Gregarious, often active in the depth of winter.

*North.*

"Common in the crevices of limestone rocks at Clevedon and Elton Hills, Cleeve Foot, Wrington Hill, Cheddar Cliffs, etc., and often exceedingly abundant among the rotten mortar of old walls, as behind the Royal Hotel at Clevedon, and in many spots on the Mendips" (Norman, under *Helix umbilicata*, Montagu). Jenyns Coll., as *Helix umbilicata*, Bath Museum.

Mr. Taylor considers Montagu's *Helix umbilicata* to be identical with *Helix rupestris* var. *depressa* *Westerlund*, and remarks that "this, the depressed form of the species, is more especially prevalent in the north of Europe, the bulk of the British specimens being probably referable to it, the spire becomes more elevated as the southern range increases." He figures it in his *Mono-*

*graphs* (II, 172) as *P. rupestris* var. *umbilicata* Montagu, and mentions three British records, one being "Wall, Cranmore, 1888! G. K. Gude." Apparently all Norman's specimens are to be referred to this variety, which, however, does not find a place in the Conchological Society's list of British non-marine Mollusca.

Churchyard wall at Bratton St. Maur!

Cheddar; *W. Maddison*.

On old walls at Bath; *Miss Fairbrass*.

Weston district; *F. A. Knight*.

Limestone rocks about Worle and Clevedon!

#### *South.*

Ham Hill, Yeovil, *J. Ponsonby*.

Var. *viridescenti-alba*; *Jeffreys*.

"Found by Mr. Norman at Clevedon, also by Mr. Webster, at Clifton, near Bristol;" *G. Jeffreys*.

PYRAMIDULA ROTUNDATA, Müller (= *Helix rotundata*, Müller).

Generally distributed, one of the commonest of our molluscs, and more frequently met with than any other of the smaller *Helices* on arid greensand soil. It is said to pair occasionally with *Hyalinia alliaria*.

Var. *Turtoni*, *Fleming*.

Bath and Bristol; *Gwyn Jeffreys*.

Clevedon; *Miss L. C. Jones*.

Bath; *Mrs. Oldroyd*.

Rejectamenta of streams at Bratton St. Maur and Shepton Montague!

Var. *pyramidalis*, *Jeffreys*.

Bristol; *McMurtrie*.

Var. *rufula*, *Moquin-Tandon*.

Ellescombe Wood, near Bratton St. Maur, and Milton-Clevedon, near Bruton!

Var. *alba*, *Moquin-Tandon*.

Clevedon; *Norman*.

Bratton St. Maur and Milton Clevedon!

Weston Wood!

Hatch Beauchamp. Five specimens, an undersized race.

Diam. 6mm.; *E. W. Wake-Bowell*.

Dulverton, rather common; *Hugh Watson*.

Minehead; *C. Oldham*.

Cocker Combe, Triscombe Stone; *N. G. Hadden*.

Mon. *scalariforme*.

Gribb Wood, Bratton St. Maur !

*P. ruderata*, Studer, a closely allied species with more produced spire and without the red-brown freckles of *P. rotundata* is known only in the fossil state in this country, but Taylor thinks "it is by no means unlikely that isolated colonies may still linger within the limits of the British Isles."

## HELICIDÆ.

HELICELLA VIRGATA, *Da Costa* (= *Helix virgata*, *Da Costa*).  
Generally distributed.

"Very abundant, especially on dry hills and the sea coast. It is very varied in colouring on the sandhills"; *Norman*. It occurs in a holocene deposit on Brean Down, Weston-super-Mare. This species, and *H. caperata*, secrete themselves at the roots of herbage in times of drought. After rain they come out to feed, often so quickly and in such enormous numbers as to lead to the supposition amongst ignorant people that they came down with the rain.

Var. *subaperta*, *Jeffreys*.

Bath; *Clark*.

Var. *carinata*, *Jeffreys*.

Bratton St. Maur !

Var. *lineata*, *Olivi* (= v. *submaritima*, *Jeffreys*).

Clevedon; *McMurtrie*.

Creech Hill, Bruton, and Bratton St. Maur !

Bath; *Kenneth McKean*.

Sandhills between Weston and Burnham !

Var. *leucozona*, *Taylor*.

Bristol; *Bristol Mus. Coll.*

Burnham; *Norman*.

Weston-super-Mare; *Miss F. M. Hele*.

Quarry on top of Castle Cary Hill !

Sandhills about Berrow !

Var. *maculata*, *Moquin-Tandon*.

Arable fields on Holbrooke Farm, Bratton St. Maur !

Burnham; *Norman*.

Var. *nigrescens*, *Grateloup*.

Burnham; *Norman*.

Var. *hypozona*, *Moquin-Tandon*.

Bath ; *Kenneth McKean*.

Var. *subalbida*, *Poiret*.

Dr. H. Franklin Parsons sent a specimen, collected in E.

Somerset, to Mr. Taylor (*Journ. Conchology*, IV. 30).  
Minehead !

Var. *albicans*, *Grateloup*.

Bath ; *Mrs. Oldroyd*.

Penselwood, Minehead, Bratton St. Maur, and hills around

Bruton and Milton Clevedon !

Near Bristol ; *Bristol Mus. Coll.*

Berrow, Burnham, and about Weston-super-Mare !

Var. *hyalozonata*, *Taylor*.

Tickenham Churchyard ; *Norman*.

Clevedon ; *Miss F. M. Hele*.

Mon. *sinistrorsum*.

Sea-wall near Clevedon ; *Norman*.

#### HELICELLA ITALA, *Linné* (= *Helix ericetorum*, *Müller*).

Chiefly on downs and pastures in hilly districts on calcareous soils.

##### *North.*

Abundant on the sides of the trenches at Cadbury Camp,  
and of the Mendips near Wells. Wrington Hill, and  
other localities ; *Norman*.

Ashley Hill ; *Cundall*. Bath ; *Kenneth McKean*.

Burnham and Berrow, on the sandhills !

Castle Cary, road over hill leading to Ansford ; Crawlands  
and Holbrooke, Bratton St. Maur !

Very abundant on Creech Hill, near Bruton !

Weston district ; *F. A. Knight*.

##### *South.*

Yeovil ; *J. Ponsonby*.

Ham Hill, common ; a few variety "*griseus*" ; *J.*  
*Ponsonby*.

Wellington ; *W. Gyngell*.

Var. *instabilis*, *Ziegler*.

Near Clevedon ; *Bristol Mus. Coll.*

Var. *leucozona*, *Moquin-Tandon*.

Cornfields at Holbrooke, Bratton St. Maur !

Creech Hill, near Bruton !

*HELICELLA CAPERATA*, *Montagu* (= *Helix caperata*, *Montagu* ; = *Helix intersecta*, *Poiret*).

Generally distributed in open dry situations on calcareous soils, often present in enormous numbers. It occurs in a holocene deposit on Brean Down, Weston-super-Mare.

Var. *subscalaris*, *Jeffreys*. Two examples from the railway cutting near the Vicarage, Shepton Montague !  
Monkton Combe ; *Kenneth McKean*.

Var. *ornata*, *Picard*. The very distinct markings of this variety are, according to the Rev. S. Spencer Pearce, probably of a warning or aposematic character, enabling the shells to be easily seen and consequently avoided by sheep. It is said that this form is more abundant than the indistinctly marked type on downs and pastures where sheep are fed, but I have not observed such to be the case.

Crawlands and Grovelands, Bratton St. Maur !

About Creech Hill and Milton Clevedon !

Monkton Combe ; *Kenneth McKean*.

Dunes about Weston-super-Mare !

Var. *fulva*, *Moquin-Tandon*.

Bratton St. Maur and Wincanton district generally !

Creech Hill, Bruton and Castle Cary !

Dulverton ; *H. Watson*.

Monkton Combe ; *Kenneth McKean*.

Var. *lutescens*, *Pascal*.

From a quarry on the summit of Castle Cary Hill. The colour is admirably protective, exactly resembling that of the stones amongst which it lives.

Monkton Combe ; *Kenneth McKean*.

Var. *obliterata*, *Picard*.

Wincanton, Castle Cary and Bruton !

Uncommon. Through an oversight given as "common" in my paper in the *Journal of Conchology*, 1899.

Var. *alba*, *Picard*.

Crawlands, Bratton St. Maur ! *Haslemere Mus. Coll.*

Monkton Combe ; *Kenneth McKean*.

*HELICELLA BARBARA*, *Linné* (= *Helix acuta*, *Müller* ; = *Bulimus acutus*, *Müller*).

This interesting species is, I think, strictly xerophile and exclusively confined to the sandhills bordering the coast. It is, however, recorded in Leipner's List of the L. and F. W.



Moll. of the Bristol district as having been found by Mr. T. Graham Ponton under stones on the Downs in 1863, and in Leigh Woods by Mr. Edwin C. Wheeler, but I am not aware that these records have been confirmed in recent years. It occurs in a subfossil state amongst earth from the rabbit burrows on the south side of Brean Down, Weston-super-Mare. Does it still exist there? I failed to find living specimens.

Burnham; *Bristol Mus. Coll.*

Sandhills along the coast between Burnham and Weston;  
*Norman.*

Weston district; *F. A. Knight.*

Remarkably abundant on the sand dunes between Weston and Burnham, but exhibiting very little diversity in form and marking!

Var. *strigata*, *Menke.*

Burnham! Uncommon.

HELICELLA CANTIANA, *Montagu* (= *Helix cantiana*, *Montagu*).

Locally abundant. Gwyn Jeffreys observed that it is "not uncommon in parts of Somersetshire" (*Linn. Soc. Trans.*, 1833).

*North.*

"Brislington is the only locality in Somersetshire in which we know this shell to occur. It was first taken there by Mr. Miller"; *Norman.*

Ashley Hill and Leigh Woods; *Cundall.*

Avon Gorge and Dundry; *Bristol Mus. Coll.*

Bath; *Jenyns Mus. Coll.*

"In the Bristol district it was first observed between Brislington and Keynsham in 1825"; *Ralph Tate.*

*South.*

"Common in one extended locality at Hatch Beauchamp, near Taunton"; *E. W. Bowell.*

Near Durleigh, Bridgwater; *H. Corder.*

Var. *albida*, *Taylor.*

Bristol; *Bristol Mus. Coll.*

HYGROMIA FUSCA, *Montagu.*

Very local. It was described by Mr. J. S. Miller of Bristol in the *Annals of Philosophy* (1822), under the name of *Helix subrufescens*. He remarked that he had found it not infrequently in Somerset. Montagu was the first to recognise this species and described it in his *Testacea Britannica*, 1803.

*North.*

Leigh Woods, Bristol ; *W. W. Stoddart*.

Gribb Wood, Bratton St. Maur ; hedgebanks by roadside on the upper slopes of Milton Hill, near Bruton !

Base of Callow cliffs, above Hale Well ; *F. A. Knight*.

"A large and very depressed example," Leigh Woods, Clifton ; *H. Watson*.

*South.*

Hatch Beauchamp, near Taunton. "Local but occurring in several hedgebanks. It seems to be fond of moss as a habitat" ; *Wake-Bowell*.

Near Minehead ; *Adams and Oldham*.

Dulverton ; *H. Watson*.

*HYGROMIA GRANULATA*, Alder (= *Helix sericea*, Jeffreys).

A rare species. According to Jeffreys it is "not uncommon in hedge-banks and moist woods in Somersetshire" (*Linn. Soc. Trans.*, 1833). There are specimens in the Jenyns Collection, Bath Museum.

*North.*

Ashley Marsh, Bristol ; *Bristol Mus. Coll.*

"We have met with two or three worn examples among the rejectamenta of the Avon" ; *Norman*.

Once in Weston Wood ; *F. A. Knight*.

Mitford ; *Kenneth McKean*.

*South.*

Plentiful when it occurs, but apparently very local. Damp spots in woods. Around Yeovil. Montacute and Pitt Wood, numerous ; *J. Ponsonby*.

Wellington ; *W. Gyngell*.

*HYGROMIA HISPIDA*, Linné (= *Helix concinna*, Jeffreys).

Generally distributed, often very abundant in damp situations. Messrs. Kennard and Woodward record it from an alluvial deposit at Castle Cary.

*Var. subglobosa*, Jeffreys.

Churchyard, Bratton St. Maur, and two specimens from rejectamenta of the stream at Shepton Montague !

*Var. conica*, Jeffreys.

Wells ; *F. Townsend*. Haslemere Museum Collection.

*Var. hispidosa*, Mousson. This is the *Helix hispida*, Jeffreys, and is commonly found with the type.

Var. *depilata*, *Alder*.

Rare on Cadbury Hill, Matton, and Ebbor Rocks, near Wells; *Norman*.

Rejectamenta of stream near Shepton Montague!

Var. *nana*, *Jeffreys*.

Creech Hill!

Var. *subrufa*, *Moquin-Tandon*.

Rejectamenta of stream at Shepton Montague, and of the River Brue below Castle Cary!

Frequent in hedges at Bratton St. Maur!

Var. *albo-cincta*, *Taylor*.

Rejectamenta of stream at Shepton Montague!

Bratton St. Maur! *Haslemere Mus. Coll.*

Var. *albida*, *Jeffreys*.

Ashley Downs; *Cundall*.

Castle Cary; churchyard at Bratton St. Maur!

HYGROMIA RUFESCENS, *Pennant* (= *Helix rufescens*, *Pennant*).

Generally distributed. "Varies according to the habitat. Those among brambles and in hedges are mostly large and horn-coloured, while specimens from drier situations are smaller, deeper in colour, and more elevated in the spire" (*Norman*). Messrs. Kennard and Woodward record it from an alluvial deposit at Castle Cary.

Var. *rubens*, *Moquin-Tandon*.

Common throughout the Wincanton district!

Rimpton!

Var. *albo-cincta*, *Cockerell*.

Rejectamenta of the streams at Shepton Montague!

Dulverton; *H. Watson*.

Var. *alba*, *Moquin-Tandon*.

Near Clevedon, stones lying by an old lime kiln; *Norman*. Wincanton, Glastonbury, Bruton, Castle Cary, and Bratton St. Maur! I have often found it crawling on the leaves of *Arum maculatum*.

Leigh Woods; *Cundall*.

Dulverton; *H. Watson*.

ACANTHINULA ACULEATA, *Müller* (= *Helix aculeata*, *Müller*).

Locally abundant.

*North*.

On Beachen Cliff and in the woods of Claverton Down, Bath; *Clark*.

Examples in the Jenyns Collection, Bath Museum.

Under bark of a fallen tree in Brockley Coombe; *Norman*.  
Leigh Woods; *Cundall*.

Creech Hill, Bruton!

Woods at Holbrooke and about Bratton St. Maur; near  
Wincanton!

Very abundant in rejectamenta of River Brue at Castle  
Cary, and streams at Bratton St. Maur and Shepton  
Montague!

Weston district; *F. A. Knight*.

*South.*

Brympton, Yeovil; *J. Ponsonby*.

Dulverton; *H. Watson*.

Var. *albida*, *Jeffreys*.

Bath; *Clark*.

VALLONIA PULCHELLA, Müller (= *Helix pulchella*, Müller).

This species is probably generally distributed. Until quite recently two species were included under the name *Helix pulchella*, therefore it is advisable to omit all records given in published Lists. There are specimens in the Haslemere Museum and in the Museum at Sexey's School, Bruton, which I gathered many years ago at Bratton St. Maur, where it was very abundant under the flat stones capping old walls. Specimens from Brympton and Sutton were sent to Mr. John Taylor by Mr. Ponsonby, and Mr. Kenneth McKean collected it near Bath.

Brean Down, Weston-super-Mare!

Plantations on the peat moors about Shapwick!

VALLONIA COSTATA, Müller (= *Helix pulchella*, var. *costata*, Müller).

Its elevation to specific rank dates from the discovery by Dr. Sterki of very fine, raised revolving lines on the nucleus of the  $1\frac{1}{2}$  embryonal whorls. In *H. pulchella* these whorls are smooth. It appears to be widely distributed.

*North.*

Wincanton district generally. Bratton St. Maur; *Haslemere Mus. Coll. and Sexey's School, Bruton*. Rejectamenta of River Brue below Castle Cary!

Abbot's Leigh; *Bristol Mus. Coll.*

Near Tickenham; *Norman*.

Coombe Down, Bath; *Mrs. Oldroyd*.

*South.*

Between Minehead and Watchet; *Lionel Adams and Charles Oldham*.  
Yeovil district; *J. Ponsonby*.

VALLONIA EXCENTRICA, *Sterki*.

Closely allied to *V. pulchella*, differing chiefly in the excentric and somewhat elongated umbilicus. (See *British Non-Marine Mollusca*, pp. 42-43). It occurs in similar situations, and is probably equally widely distributed.

*North.*

There are several specimens in the Haslemere Museum Collection found amongst a large series of *Helix pulchella* collected at Bratton St. Maur in the years 1894-96.  
Near Clevedon Old Church at roots of grass!  
On Brean Down, Weston-super-Mare!  
Plantations on the turf moors around Shapwick!

*South.*

Luccombe!

HELICIGONA LAPICIDA, *Linné* (= *Helix lapicida*, *Linné*).

Generally distributed on limestone rocks and old walls.

Var. *brunnea*.

Ham Hill; *J. Ponsonby*.

Var. *nigrescens*, *Taylor*.

Bristol; *Bristol Mus. Coll.*

Bratton St. Maur, Wincanton and Rimpton!

Var. *albina*, *Menke*.

Specimens of this interesting variety taken from a stone wall near Wells were exhibited by the Rev. S. Spencer Pearce at the meeting of the Conch. Soc., July 7th, 1887. In a note in the *Journal of Conchology* (p. 255) of the same year Mr. Pearce stated that they occurred "on a loose ivy-coloured stone wall on the old Bristol road, just outside the city. The variety is associated in this place with individuals of a brown form. The pale brown specimens are the most frequent. It is easy indeed to arrange a complete series which will show every variation in colour from the dark-brown to the purest white. The wall on which this variety flourishes is composed of rough blocks of liassic limestone taken from a small pit close at hand."



In the fourth volume of the *Journal of Conchology*, Jan., 1883 (p. 27), Miss F. M. Hele records the discovery of a single specimen near Leigh Court, Bristol.

*Mon. scalariforme.*

A scalarid example which I found crawling on a gate-post at Rimpton in company with several normal specimens, may be seen in the Haslemere Museum Collection.

*HELICIGONA ARBUSTORUM, Linné (= Helix arbustorum, Linne).*

Locally abundant, occurring chiefly on the lower south-western slopes of the limestone hills. "Around Bristol the shells are very dark, perhaps from the red soil, for although around Bristol lias abounds, the Mountain Limestone at Clifton seems preferred. I have noticed that in chalky districts the white variety is more abundant, and the shells are generally of a thinner texture, and the animals lighter in colour than ours here at Bristol, which are almost black" (Miss F. M. Hele).

*North.*

"Frequent, though local. I have taken it in the lane leading from Clevedon to Clapton; under heaps of stones on Strawberry Hill, Clevedon; upon the banks of the canal at Bath; among nettles at Cheddar Cliffs; and hedgebanks near Axbridge;" *Norman.*

"Foot of the cliffs called the Perch, between Shipham and Axbridge, and more abundantly in Cheddar Gorge, on the right going up"; *F. A. Knight.*

Dundry and Leigh Woods, Bristol; *Bristol Mus. Coll.*

Hedge-banks on the lower slopes of Castle Cary Hill; *W. Macmillan.*

West Pennard, Pitcombe, Milton Clevedon, and several hedges on the outskirts of Bruton!

Blomfield Park, Bath; *Kenneth McKean.*

Bath; *Jenyns Mus. Coll.*

*South.*

Near Taunton; *E. W. Bowell.*

Dulverton; *Hugh Watson.*

Montacute; *J. Ponsonby.*

Wellington; *W. Gyngell.*

Dunster!

In two hedges about a mile apart bordering the wood near Brympton; *J. Ponsonby.*

Var. *conoidea*, *Westerlund*.

Leigh Woods, Bristol; *Bristol Mus. Coll.*

Hedgebanks at Milton Clevedon, and the lower slopes of  
Creech Hill towards Bruton! *Haslemere Mus. Coll.*

Var. *fuscescens*, *Duchassing* (=v. *marmorata*, *Taylor*).

Milton Hill, near Bruton, and hedgebank, near Castle  
Cary!

Montacute; *J. Ponsonby*.

Var. *cineta*, *Taylor* (=v. *pallida*, *Taylor*).

Near Bruton, rare; *C. D. Heginbotham*.

Milton Clevedon!

Var. *flavescens*, *Moquin-Tandon*.

Near Bristol; *Bristol Mus. Coll.*

Gant's Mill, near Bruton, a conoidal form!

Montacute; *J. Ponsonby*.

Milton Clevedon!

Var. *albina*, *Moquin-Tandon*.

Bath; *Bristol Mus. Coll.*

# HELIX ASPERSA, Müller.

The well-known common or garden snail, always abundant in the neighbourhood of human habitations, and often a great pest in gardens. It is sold in the Bristol markets, and elsewhere, as "wall-fish," and is an esteemed article of diet by the poor of Bristol, Swindon, and other towns. There are men who make a livelihood during the winter by collecting these snails from their hibernating places. In November, 1896, I met a "wall-fish" collector at Bratton St. Maur. He was collecting for a Bristol dealer, his home, however, was in Kent, where he worked as a carpenter in summer and autumn. He had visited Somerset regularly for many winters to collect these snails. He told me that the *hybernaculum* usually faces the south-west, that the molluscs congregate in some numbers, and appear to have a predilection for certain spots. They seldom hibernate under oaks, and, though old walls are favourite retreats in summer (whence they probably owe the name of "wall-fish"), they rarely winter in them. He carried an iron rod about two feet long, slightly crooked at one end, with which he probed likely nooks and corners. He had that morning extracted a gallon and a half of these snails from a *hybernaculum* near the village, but this was an unusual occurrence: he asserted that his "takings" seldom exceeded a gallon per day.

General Pitt-Rivers, when excavating at Bokerly Dyke in 1888, found a large number of shells, including 183 of oysters and 109 of *H. aspersa*. Apparently the latter mollusc was an article of food in Romano-British times in the West of England, and the practice of eating it has lingered on to the present time. Mr. St. George Gray records that many shells were found in Wick Barrow, Stogursey, dating from the Early Bronze Age, about 1800 B.C.

Ten varieties and two monstrosities of this species are enumerated in the Conchological Society's List of British non-marine Mollusca: all of them have been found in Somerset. Concerning colour variation, Miss F. M. Hele, a well-known Bristol conchologist, informed Mr. J. W. Taylor that the form prevalent near Bristol is "dark-coloured;" at Weston-super-Mare it is brown with black markings; near Bath very pale and much mottled; at Cheddar the shells are very solid and large; but at Clevedon no special peculiarity has been noticed (*Journ. Conch.* IV, 93). I have seen very fine specimens in the Wincanton district; many years ago I obtained a very large and dark-coloured one from a hedge at Bratton St. Maur, it was quite as large and nearly as solid as an adult *H. pomatia*. Mr. St. George Gray found a very large one in Wick Barrow. There are specimens in the British Museum, labelled var. *major*, from Blagdon and Weston-super-Mare. Very small and thin forms are not infrequently met with; these must not be confused with immature shells; they usually occur near the sea, but I have taken examples at Bratton St. Maur.

A most interesting fact in connection with this species is its ability to bore into limestone. Whilst examining the Carboniferous Limestone cliffs on the south side of Brean Down in June, 1910, I found cavities in the face of the rock (Plate III) which were obviously retreats of *H. aspersa*. After an examination of a number of them I concluded that these molluscs were responsible for their formation. In many the aperture was circular and large enough to admit the shell easily. In the majority the cavity was about two inches deep and contained a single individual, but in some the tunnel was five or six inches long and was occupied by two or three. My attention was first directed to them by observing a large heap of excrement at the base of a vertical rock in which the hole was about eighteen inches above the ground. The homing instinct of these snails is well known, and in all probability each animal has its own particular *hybernaculum*. The discovery of these burrows on Brean Down is of some interest in that they are

PLATE III.



ROCK-SHELTERS OF *HELIX ASPERSA* IN  
CARBONIFEROUS LIMESTONE ON BREAN DOWN,  
WESTON-SUPER-MARE.

The rock was situated in an exposed position and is greatly weathered. In sheltered situations the apertures of the *hybernacula* are usually circular.

*From a photograph by George Hutchinson, Sidcot School.*





by no means common in England. Taylor records (*Monograph*, III, p. 246), that perforated rock dwellings are found in many places in Ireland, at Great Orme's Head and Tenby in Wales, at Miller's Dale, Derbyshire, at Whelpington, Northumberland, "and probably at other places." He observes (I, p. 312) that "the ability of the *Helices*, in course of ages to excavate these tunnels, can scarcely be questioned, as, in addition to their demonstrated power to abrade limestone and chalk with their odontophores, M. Bouchard-Chautereux has affirmed from actual experiment that their mucoid secretions exhibited a distinctly acid reaction, testified by the reddening of litmus paper, and would, therefore, tend to dissolve the rock, and thus facilitate the process of the excavation. Probably, however, the movements of the snails within the cavities have been a chief cause of their excavation, the wearing power of the friction of the foot being clearly demonstrated by the worn margins of the cavities, and by the sunken tracks leading thereto, worn away in the rocks by the passage to and fro of the countless generations of snails which have for untold ages sought their shelter."

Var. *conoidea*, *Picard*.

General in hedges; *Cundall*.

Bratton St. Maur! Uncommon.

Var. *globosa*, *Moquin-Tandon*.

One example from a hedge near Pitcombe Rectory!

Var. *tenuior*, *Shuttleworth*.

Bratton St. Maur! A rare form usually occurring near the sea.

Burnham!

Var. *nigrescens*, *Moquin-Tandon* (Plate IV, 1).

Occasionally with the type in hedgebanks.

Bratton St. Maur and Rimpton!

Miss F. M. Hele found a specimen at Burnham, which was "literally as black as ink."

Var. *undulata*, *Moquin-Tandon*.

Holbrooke, near Wincanton!

Weston-super-Mare; *J. Madison*.

Bristol; *Miss Hele*. Figured in Taylor's *Monograph*, III, Pl. XXIII.

Var. *flammea*, *Picard*.

Not uncommon in the Wincanton district!

Var. *albo-fasciata*, *Jeffreys*.

Near Bristol; *Bristol Mus. Coll.*

Fairly common about Jack White's Gibbet, Bratton St. Maur!

Sub-var. *puncticulata*.

With an indistinct and narrow yellow peripheral band (Plate IV, 5).

Bratton St. Maur!

Var. *zonata*, *Moquin-Tandon*.

Cheddar; *Miss F. M. Hele*.

Bratton St. Maur!

Berrow!

Var. *unicolor*, *Moquin-Tandon*.

"An unicolorous specimen (not *exalbida*, *Menke*) from Hatch Beauchamp, near Taunton; *Rev. E. W. Wake-Bowell*.

Bath; *Miss Fairbrass*.

Freshford, rare; *Miss F. M. Hele*.

Sub-var. *grisea*.

Leigh Woods; *Miss F. M. Hele*.

Coombe Down, Bath; *Mrs. Oldroyd*.

Near Porlock; *L. E. Adams*.

Yeovil; *W. Gyngell*.

Var. *exalbida*, *Menke* (Plate IV, 4).

Locally abundant. *Miss F. M. Hele* informed Mr. Taylor that she had "easily bred *H. aspersa*, but variety *exalbida* degenerates into a shell covered with a dirty brownish-yellow epidermis, instead of the exquisitely delicate lemon hue found on them in their wild state; I have thought that feeding them on lettuce may produce this change of colouring, as the more lettuce I gave mine, the darker and dingier the epidermis became" (*Journ. Conch.*, IV, 100). Taylor remarks that "in the neighbourhood of nettles and ivy at Leigh Woods, Clifton, where it was discovered by Miss Hele, as many as twenty have been taken in a single evening, but the chief locality is now destroyed, being covered by a flourishing street of shops" (*Journ. Conch.*, 1883).

Common, Leigh Woods, 1878; *Miss F. M. Hele*.

Cuckoo Hill, near Bruton, very local but abundant; *C. D. Heginbotham*.

The cross roads at Bratton St. Maur, known as "Jack White's Gibbet"! At this spot I once secured between 50 and 60 fine specimens in one evening.

Cannington, near Bridgwater.



THE GARDEN SNAIL.

(*Helix aspersa*, Müller).

- 1, Variety *nigrescens*, Moquin-Tandon, penultimate whorl slightly abraded ;  
 2, 3, monstrosity *scalariforme*, Férussac ; 4, var. *exalbida*, Menke ; 5, sub-  
 var. *puncticulata*, Baudon ; 6, var. *zonata*, Moquin-Tandon, shewing  
 aperture covered with the winter epiphragm.

The scalarid examples were taken at Cole, the others at Bratton St. Maur.

From a photograph by Dr. Roger Hutchinson, Haslemere.



*Mon. sinistrorsum.*

Clevedon ; *Norman.*

Bristol and Bath ; *Miss F. M. Hele.*

Miss Hele found three specimens on separate occasions in Paddy's Lane, Bristol.

*Mon. scalariforme.*

"I have found near Bristol two shells approaching the ram's horn variety shewn at the British Museum ; *Miss F. M. Hele.*

This form is exceedingly rare, it is the *mon. cornucopia*, *Gmelin*, of our text books. Mrs. Oldroyd took a specimen at Bath.

"A very fine example found at Taunton is almost like *mon. cornucopia* ; *W. Gyngell.*

Two typical scalarid specimens (see Plate IV, 2, 3) were obtained by Mr. William Macmillan from a "wall-fish" collector near Cole Station. He generously presented them to the Haslemere Museum ; also the subscalarid example mentioned below. These occupy an intermediate position between the extreme scalarity of *cornucopia* and the form at one time known as *mon. subscalariforme*, *Williams*. Of the latter we have the following Somerset record : "Examples upon the cliffs towards Ladies' Bay, Clevedon, have the spire produced so that the shell assumes the form of *Paludina viviparus* ;" *Norman*. A single specimen was found by Mr. William Macmillan in the "creel" of a wall-fish collector near Castle Cary.

## HELIX NEMORALIS, *Linné.*

Generally distributed. Remarkably abundant, and showing great diversity in size, coloration, and banding, on the sand-hills by the coast about Burnham, where I have found some very large forms, also dwarfed ones. Large forms (var. *Major*, *Férussac*) have also been recorded from Cheddar Cliffs (*J. Madison*) and Weston-super-Mare ! Mr. H. St. George Gray found it commonly in the excavation of Wick Barrow, Stogursey, in 1907.

Var. *conica*, *Pascal.*

A fine example from Abbot's Hill, Bratton St. Maur !  
Near Locking ; *J. Madison.*

Var. *compressa*, *Terver.*

Hedge at the bottom of Bratton Hill, Bratton St. Maur !



Var. *roseolabiata*, *Kobelt*.

"We have met with a rare variety at Wells, which is orange, with five pale yellow bands, and has the lip and throat peach-coloured"; *Norman*.

A specimen taken by Miss Hele at Blagdon is figured in Plate I, vol. i, of J. W. Taylor's *Monograph*.

Bratton St. Maur!

Bitton, Bath; *Miss F. M. Hele*.

Var. *bimarginata*, *Moquin-Tandon*.

One example from Abbot's Hill, Bratton St. Maur!

Var. *rubella*, *Moquin-Tandon*.

A common form.

Bath; *Mrs. Oldroyd*.

Weston-super-Mare and Berrow!

On the sand dunes at Burnham, amongst gorse on hillsides at Bratton St. Maur, and in hedges bordering Milton Hill, near Bruton!

Dulverton; *H. Watson*.

Taunton; *W. Gyngell*.

Triscombe Stone and Buncombe; *N. G. Hadden*.

Sub-var. *cornea*.

Burnham; Milton Hill, near Bruton!

Minehead; *L. E. Adams*.

Var. *libellula*, *Risso*.

A common form.

Bristol; *Bristol Mus. Coll.*

Weston-super-Mare.

Burnham sandhills; woods and gorse-clad hillsides at Bratton St. Maur!

Milton Clevedon and around Bruton; *C. D. Heginbotham*.

Dulverton; *H. Watson*.

Var. *fasciata*, *Picard*.

Shell with pale and opaque peripheral band, usually on a darker but more translucent ground tint. Concerning this form Mr. Taylor writes in his *Monograph* (III, p. 312): "This variety is one of the most interesting and suggestive of the whole range this species offers, and has been hitherto named as distributed as var. *leucozona*, but Picard's name takes precedence; it is evidently an atavistic form and must be classified with the similar palæogenic forms exhibited by *Helix cantiana*, *H. hispida*, *H. rufescens*, and other species. This former scheme of colouring may be readily recognised even when

complicated with the presence of the more modern scheme of fasciation, as the space between the upper and lower group of bands of the ancient band arrangement is not coincident with that separating the modern banding, but invariably occupies a higher position on the whorl, so that the modern dark peripheral or third band is developed almost in the centre of the formerly existent peripheral space, which is thus really supra-peripheral and clearly indicates a former approximation in band arrangement to that which now characterizes the somewhat more primitive yet sub-dominant South-European genus *Campylæa*."

Bitton, near Bath; *Miss F. M. Hele*.  
Rimpton!

Var. *castanea*, *Picard*.

A frequent form.

Bristol; *Bristol Mus. Coll.*

Bath; *Mrs. Oldroyd*.

Milton Clevedon and around Bruton; *C. D. Heginbotham*.

Bratton St. Maur, abundant amongst gorse on hillsides;  
*W. Herridge*.

Frequent on the sandhills at Burnham and Berrow!

Hatch Beauchamp; *E. W. Wake-Bowell*.

Taunton; *W. Gyngell*.

The fawn-coloured sub-var. *petiveria* occurs at Weston-super-Mare, on the higher slopes of Milton Hill, and on gorse-clad hillsides at Bratton St. Maur!

Var. *olivacea*, *Risso*.

Blagdon; *Miss F. M. Hele*.

Milton Clevedon; Bratton St. Maur and Burnham!

Shapwick! Taunton; *E. W. Wake-Bowell*.

Baltonsborough; *S. C. Clapham*.

Var. *studeria*, *Moquin-Tandon*.

Shell lilac-colour. "This variety is really a very uncommon shell, and though somewhat frequently found of a lilac colour, the shells are generally denuded specimens of certain forms of vars. *rubella* or *castanea*, which have a purplish ground beneath the epidermis" (Taylor, *Mon.*, III, p. 306).

Minehead, July, 1900; *Guy Breeden*.

Var. *hyalozonata*, *Taylor*.

Burnham, rare!

Var. *lateritia*, *Dumont and Mortillet*.

Cheddar; *F. H. Sykes*.

Sub-var. *roseozonata*.

Blagdon; *Miss F. M. Hele*.

Var. *citrinozonata*, *Cockerell*.

Abbot's Hill, Bratton St. Maur, very rare!

Var. *undulata*, *Gentiluomo*.

Blagdon; *Miss F. M. Hele*. Figured in Taylor's *Monograph*, III, 312.

Milton Clevedon; and Grovelands, Bratton St. Maur!

### HELIX HORTENSIS, *Müller*.

Generally distributed. Perhaps more abundant in roadside hedges than elsewhere, especially in the vicinity of villages. Like *H. nemoralis*, it exhibits remarkable diversity in colour and banding. Extreme forms alone are recognised as varieties in the Conchological Society's list. A collector may easily obtain on the limestone in Somerset a series of specimens shewing every gradation of colour between two colour forms, such as var. *albina* and var. *lilacina*. Some of the intermediate forms present a piebald appearance and may be considered as hybrids, for example, the var. *lutea* is sometimes blotched with faint lilac spots (var. *lutea-lurida*, *Williams*). I have taken large forms (var. *major*, *Moquin-Tandon*) at Bratton St. Maur; dwarf forms (var. *minor*, *Moquin-Tandon*) have been taken by Miss Fairbrass at Bath, Miss Hele at Blagdon, Mr. C. D. Heginbotham in the neighbourhood of Bruton, and by the writer about Bratton St. Maur.

Messrs. Kennard and Woodward record *H. hortensis* from a holocene deposit of great antiquity at Castle Cary.

Var. *roseolabiata*, *Taylor*.

Frequent in East Somerset, in the district between the three towns, Wincanton, Bruton, and Castle Cary!

Rimpton! About Berrow and Burnham!

Blagdon, and Bitton, near Bath; *Miss F. M. Hele*.

Var. *fuscolabris*, *Kreglinger* (= *fuscolabiata*, *Von Martens*).

Frequent in the neighbourhood of Wincanton, Bruton, and Castle Cary!

Rimpton!

Dulverton; *H. Watson*.

Yeovil; *Kenneth McKean*.

Var. *violacea-labiata*, *Taylor*.

Blagdon; *R. Miller Christy*.

Var. *ludoviciana*, *Moquin-Tandon* ; sub-var. *tenuis*.  
Bratton St. Maur !

Var. *alba*, *Picard* (= *albina*, *Moquin-Tandon*).  
Bristol ; *Bristol Mus. Coll.*

Bratton St. Maur, Milton Clevedon Hill, and Rimpton !  
Bitton, near Bath, common in hedgerows ; Cheddar and  
Portishead ; *Miss Hele*.

Var. *lutea*, *Picard*.

A common form throughout the country.

Mr. W. Gyngell found B.F. 00300 at Wellington.

Sub-var. *lutescens*. Blagdon, and Bitton, near Bath ;  
*Miss Hele*.

Sub-var. *lutea-lurida*. Hedgebanks at Holbrook, near  
Wincanton ; hill-tops at Milton Clevedon and Pensel-  
wood !

Var. *incarnata*, *Moquin-Tandon*.

Wincanton district, frequent !

Penselwood ! Rimpton !

Castle Cary ; *W. Gyngell*.

Near Minehead ; *Lionel E. Adams*.

Blagdon ; *J. Kidson Taylor*.

Bitton, near Bath ; *Miss F. M. Hele*.

Var. *olivacea*, *Taylor*.

Bruton, hill towards Cole !

Rimpton !

Berrow !

Var. *baudonia*, *Moquin-Tandon*.

Cheddar (123) (45) ; *J. Kidson Taylor*.

Bratton St. Maur, 12345 !

Var. *lilacina*, *Taylor*.

Bath ; *Mrs. Oldroyd*.

Bristol ; *Bristol Mus. Coll.*

Hedges at Holbrook, Bratton St. Maur !

Rimpton !

Hatch Beauchamp ; *Wake-Bowell*.

Dulverton ; *Hugh Watson*.

Sub-var. *pallida*. Bratton St. Maur, and Cuckoo Hill,  
near Bruton !

Var. *roseozonata*, *Cockerell*.

Amongst gorse bushes on Abbot's Hill, Bratton St. Maur !

The bands were reddish pink.

Rimpton !

Var. *rufozonata*, Cockerell.

Bridgwater; *W. Vinson*.

Bruton; *C. D. Heginbotham*.

Var. *arenicola*, Macgillivray.

Frequent in the Wincanton, Bruton and Castle Cary districts!

Rimpton!

Blagdon; *Miss Hele*.

Portishead; *Miss Wilmot*.

Flax Bourton; *Rev. W. L. W. Eyre*.

Var. *trochoidea*, Clessin.

Sub-var. *conica*. Bratton St. Maur!

Mon. *sinistrorsum*.

Recorded by J. W. Taylor as "Found by Miss F. M. Hele at Coombe Dingle, near Bristol, and by Miss Jessie Hele at Keynsham, N. Somerset. Both were of an uniform yellow colour" (*Journ. Conch.*, 1883, p. 35). Sporadic sinistrorsity is of very rare occurrence. Mr. John Taylor remarks (*Monograph*, I, p. 108) that "a sinistral race of *Helix nemoralis*, almost analogous to that formerly existent of *Fusus antiquus*, would appear to have at one time lived in county Donegal, as the very numerous subfossil shells picked out of the immense sandhills about Bundoran abundantly testify." Sinistral shells from this locality may be seen in many museums.

*Notes on the shell banding in H. nemoralis and H. hortensis.*

There is great variability in the banding of these species. Herr Georg von Martens, many years ago, devised a very convenient method of recording the variation in the number of bands, which is now almost universally adopted.

Normally five bands are present, these are indicated by the formula 1, 2, 3, 4, 5; 1 being the uppermost, 5 the lowest band, that nearest to the umbilicus. If a band is missing a cypher, 0, takes its place; thus, 00300 indicates that the third or peripheral band alone is present. Bandless forms are indicated by five cyphers, 00000.

Coalesced bands are enclosed in parenthesis, thus 123(45) indicates that the fourth and fifth bands are fused. Bandless forms predominate in both species. It is curious that the form 00300 so common observed in *H. nemoralis* is of very rare occurrence in *H. hortensis*; forms with complete absence of the



peripheral band are, as a rule, uncommon in both species. Rarely six or more bands occur. There are eighty-nine possible variations when the bands are not in excess of five.

#### HELIX NEMORALIS.

The commonest representatives of the *five-banded* group (16 forms in all) are 12345, (123)(45) and (12)3(45). Somewhat rare or more local forms are (12345), 1(23)(45), (12)345, (123)45, and 123(45). I have observed all of the above in Somerset. It is noteworthy that 12(34)5 has been recorded only from Germany, Belgium, and Virginia, U.S.A.

The *four-banded* group (28 forms) contains a large proportion of rare formulæ; there are only three that may be considered at all common, *viz.*, 10345, 12045, and 02345, all occur in Somerset. The rare (1234)0, (12)340, (123)40, (12)(34)0, (12)305, and 12(34)0 are recorded only from Germany, the remaining forms have occurred in Britain, but I am not aware that any of them have been observed in this county.

The *three-banded* group (25 forms) contains four that are recorded from Germany only, *viz.*, (123)00, (12)040, (12)005, and 02(34)0. These rare continental forms should be carefully searched for by Somerset conchologists. The most abundant representative of the group in this country is 00345. I have seen it in many places. Two forms, 100(45) and 0(234)0, are said to be peculiar to Britain (I have taken the latter at Milton Clevedon), the remaining seventeen are very rare.

The *two-banded* group (14 forms) comprises chiefly rare forms. The more commonly observed are 000(45), 10300, 00304 and 00340. I have taken all of these in the Milton Clevedon district. The formula (12)000 is known only from Germany, and 02040 only from Britain. The remainder are all rare.

The *one-banded* group contains only five forms, *viz.*, 10000, 02000, 00300, 00040, 00005; of these 00300 alone is common, 00040 and 00005 are uncommon in Britain, and 10000 and 02000 are rare. I have observed 00300 commonly in this county, and 00005 only once, at Burnham.

The *bandless* form, 00000, is very common in Britain and on the Continent.

#### HELIX HORTENSIS.

Of the *five-banded* group, the most frequent forms in Somerset are 12345, (123)(45) and (12)3(45). Forms with coalesced second and third bands are uncommon, and coalesced third

and fourth bands are rarely seen. The form (12345), var. *coalita* of some authors, is locally frequent in the county, especially on the oolite hills.

The *four-banded* group comprises many rare forms, especially rare are those without the fifth band, indeed of the eight formulæ in which it is missing, only one, 12340, is at present known to science. The most frequent forms are 10345 and 12045, which are common in many parts of the county. I have taken 02345 at Bratton St. Maur and other places. According to Taylor 0(2345), (12)305 and 1(23)05 are reported from Germany and have not been met with in Britain; one half of the twenty-eight formulæ belonging to this group are as yet quite unknown, and many of the recorded fourteen are very rare.

In the *three-banded* group, ten of the twenty-five formulæ are as yet quite unknown, and several others are very rare. The most frequent form seems to be 10045; I have taken it at Bratton St. Maur and Milton Clevedon. I have also obtained 003(45) and 100(45) at the former place. Taylor observes concerning the formulæ 003(45) that it "is found in Germany and France, but is reported only from this country by Mr. C. D. Heginbotham and Mr. Swanton," and adds that "100(45) is quite scarce, being reported only by Mr. J. F. Musham and Mr. Swanton."

The majority of the recorded forms of the *two-banded* group are rare, and four of the fourteen formulæ are as yet unrecorded or unknown. The forms more usually met with are 00045 and 10005; both have been found in hedge-banks about Bratton St. Maur and Milton Clevedon. The only representative of this group which still remains to be recorded for Britain is 0(23)00.

The five forms of the *one-banded* group are all rare. The most frequently observed is 00300; I have taken it at Bratton St. Maur, Milton Clevedon and Rimpton. The very rare 10000 occurred once at Bratton St. Maur. I observed an immature specimen (second British record) of 02000 on a wall at Kewstoke in 1910. I have taken two immature examples of 00040 and three adult 00005 at Bratton St. Maur.

The *bandless* form, 00000, is very common; yellow forms being by far the most abundant throughout the country.

The unicolorous type of coloration is more frequent in *H. hortensis* than in *H. nemoralis*.

## ENIDÆ.

ENA MONTANA, *Draparnaud* (= *Buliminus montanus*, *Draparnaud*).

Local. Chiefly occurring in the Mendips, and the districts round Bath and Bristol. "Though nowhere to be met with in any numbers, *Bulimus lachhamensis* is widely distributed throughout Somersetshire"; *Norman*.

*North.*

Neighbourhood of Bristol; *Miller*.

Beachen Cliff and woods on Claverton Down, Bath; *Clark*.  
There are examples in the Jenyns Coll., Bath Museum.

"Among burnt gorse bushes near the bottom of a ravine to the left of the cliffs at Cheddar, and about a mile-and-a-half from the village"; *W. H. Hawker*.

There are two very light-brown specimens from Cheddar, in the Townsend Collection, Haslemere Museum.

"Hedgebank on road between Axbridge and Cheddar, three-quarters of a mile from the former"; *Norman*.

"Abundant at the base of Callow Cliffs above Hale Well, and above Winterhead. I have also found a few at Churchhill Batch"; *F. A. Knight*.

Hedges bordering the road above the Inn at Milton Clevedon, frequenting the decaying fronds of *Scolopendrium vulgare* in summer! The late Mr. William Macmillan brought this station to my notice. He found two or three specimens late one autumn in the hollow dried stalks of various umbelliferous plants that he was examining for pupæ.

ENA OBSCURA, *Müller* (= *Buliminus obscurus*, *Müller*.)

Generally distributed throughout the county, usually abundant in beech woods.

Var. *albina*, *Moquin-Tandon*.

Abbott's Leigh; *Bristol Mus. Coll.*

Bristol; *Rimmer*.

Combe Down, Bath; *Mrs. Oldroyd*.

## STENOGYRIDÆ.

COCHLICOPA LUBRICA, *Müller* (= *Zua lubrica*, *Müller*.)

Generally distributed. Messrs. Kennard and Woodward record it from an alluvial deposit at Castle Cary.

Var. *lubricoides*, *Férussac*.

Bath; *Clark*.

Var. *hyalina*, *Jeffreys*.

Creech Hill, near Bruton !

AZECA TRIDENS, *Pulteney* (= *Cochlicopa tridens*, *Pulteney*).

Very rare. *Jeffreys* wrote of it in 1833, "For my specimens I am indebted to the kindness of Mrs. Smith, who collected several of them alive about eight or ten years ago on some loose fragments of rock in Brockley Coombe, near Bristol." Twenty-seven years later *Norman* observed that "Brockley Coombe is the only Somersetshire locality known for this shell. It should be looked for, more especially, on the south side among damp moss."

Mr. Francis A. Knight, in a recent letter to me, remarked that it "probably occurs in Weston Wood, as two specimens were found among a number of *lubrica* from that locality."

Var. *crystallina*, *Dupuy*.

Brockley Coombe; *Jeffreys*.

CECILIOIDES ACICULA, *Müller* (= *Achatina acicula* *Müller*.)

Locally abundant. Many specimens have been obtained from river drift in the northern part of the county. It is a strictly subterranean species, and is seldom found alive.

*North.*

Yatton; *Cundall*.

Leigh Woods; *W. W. Stoddart*.

Leigh Down; *Miller*.

"Roots of grass, Clevedon Hill; Mendips, near Wells; and among *rejectamenta* of the river Avon"; *Norman*.

*Rejectamenta* of the Cale above Wincanton; of a rivulet at Bratton St. Maur; and of the Brue below Castle Cary;—in large numbers! Shepton Montague and Wincanton !

Weston and Winscombe, and in great numbers in the Brue drift; *F. A. Knight*.

Jenyns Collection, Bath Museum.

Abundant in the shaft of many of the human bones found in Wick Barrow, Stogursey; *H. St. George Gray*.

*South.*

Taunton; *W. R. Crotch*.

Hatch Beauchamp, Taunton, one specimen only; *Wake-Bowell*.

Yeovil; *J. Ponsonby*.

Luccombe !

VERTIGINIDÆ.

JAMINIA SECALE, *Draparnaud* (= *Pupa secale*, *Draparnaud*).

A local species, apparently confined to the northern half of the county, where, as Jeffreys observed (*Trans. Linn. Soc.*, 1883), it occurs plentifully in the crevices of limestone rocks in some parts.

Coombe Down, Bath; *Mrs. Oldroyd*.

Bath; *Jenyns Mus. Coll.*

Weston district; *F. A. Knight*.

Leigh Woods, Bristol; *Cundall*.

Abundant amongst limestone rocks, Wrington, Yatton, Clevedon, Wells, Cheddar, etc.; *Norman*.

Wells; *Townsend, Haslemere Mus. Coll.*

Cheddar; *Carleton Greene, Journ. Conch.* VI, p. 386.

JAMINIA ANGLICA, *Férussac* (= *Pupa ringens*, *Jeffreys*).

Very rare.

Near Bristol; *Capt. Thomas Brown*, in "*Illustrations*," 1844, p. 40.

"Among the Sandhills between Brean and Berrow; *W. Robinson* and *F. A. Knight*."

JAMINIA CYLINDRACEA, *Da Costa* (= *Pupa umbilicata* *Draparnaud*).

Generally distributed. Sometimes remarkably abundant amongst the roots of grass growing on the tops of old walls.

Var. *edentula*, *Moquin-Tandon*.

Near Tickenham; *Norman*.

Bratton St. Maur. Rare!

Var. *gracilis*, *Issel*.

"A fine produced variety occurs among the ruins of Walton Castle"; *Norman*.

Var. *curta*, *Westerlund*.

Rejectamenta of the Cale at Burton's Mill, near Wincanton!

Shepton Montague!

Var. *albina*, *Moquin-Tandon*.

Near Clevedon; *Bristol Mus. Coll.*

Ebbor Rocks, near Wells, and Clevedon; *Norman*.



JAMINIA MUSCORUM, *Linneé* (= *Pupa marginata*, *Draparnaud*).

A fairly common species, but not so widely distributed as the preceding.

*North.*

"Common amongst limestone rocks, at roots of grass, and under stones"; *Norman*.

Leigh Woods, Bristol; *Bristol Mus. Coll.*

Coombe Down, Bath; *Mrs. Oldroyd*.

Bath; *Jenyns Coll., Bath Museum*.

Rejectamenta of the Brue, below Castle Cary, and of the stream below the Rectory at Shepton Montague!

Weston district; *F. A. Knight*.

Sand dunes about Berrow and Burnham!

*South.*

Ilehester, and Ham Hill, Yeovil; *J. Ponsonby*.

Var. *bigranata*, *Rossmüssler*.

Weston-super-Mare; *Norman*.

Bath; *Clark*.

Var. *edentula*, *Clessin*.

With type; *Norman*.

Var. *albina*, *Menke*.

Recorded by Clark, Jeffreys and Norman for Somerset, without locality.

VERTIGO MINUTISSIMA, *Hartmann*.

The smallest of our native inland shells. Its distribution, as at present known in Britain, is remarkably discontinuous; but, in all probability, its minuteness often causes it to be overlooked by conchologists. Prior to my discovery of it amongst stones on hillsides at Kewstoke, in June, 1910, it had not been observed in Somerset. In neighbouring counties it has been recorded from Durdham Down, Clifton, Gloucestershire; from East Lulworth, Weymouth, and from the east coast of Portland in Dorset.

VERTIGO ANTIVERTIGO, *Draparnaud*.

Apparently rare; but the paucity of records of many *Vertigines* must not be taken as an indication of rarity. All are minute and may be easily overlooked unless searched for with the aid of a lens.

*North.*

“At Bath and Bristol, under ash boughs that have lain long on the ground”; *Jeffreys*.

Rejectamenta of the Avon; *Jeffreys*, 1833.

Rejectamenta of the stream at Shepton Montague, below the Rectory, abundant!

Weston Wood!

VERTIGO PYGMÆA, *Draparnaud*.

This is probably the commonest representative of the genus, usually occurring under sticks and bark in damp situations.

*North.*

At roots of grass, under sticks and stones, Bratton St. Maur; also extremely abundant in rejectamenta of the streams in the Wincanton district!

Abundant in Weston Wood and in Brue drift; *F. A. Knight*.

Bath; *Jenyns Coll., Bath Museum*.

*South.*

Yeovil, near Sutton, Brympton; *J. Ponsonby*.

Triscombe Stone; *N. G. Hadden*.

Var. *quadridentata*, *Studer*.

Clevedon; *Norman*.

VERTIGO PUSILLA, *Müller*.

Apparently very rare. There is only one record. Gwyn Jeffreys found it, in 1833, in rejectamenta from the Avon, near Bristol.

VERTIGO AUGUSTIOR, *Jeffreys*.

Another very rare species, found by Jeffreys in the Avon rejectamenta (see *British Conchology* I, 266). In the prefatory remarks to his list of Somerset non-marine Mollusca in the Victoria History of Somerset, B. B. Woodward remarks that this record cannot be accepted, as it “comes from a Gloucestershire locality,” yet he includes it in his list! If it is to be excluded on these grounds, so must *V. pusilla*, for both were recorded by that eminent conchologist, Gwyn Jeffreys, from rejectamenta of the Bristol Avon.

## CLAUSILIIDÆ.

BALEA PERVERSA, *Linne*.

Frequent in the northern half of the county.

*North.*

"Very local. Under moss on trees in Small Coombe Wood, Bath; among decaying leaves on Walton Downs, near Clevedon; also at Brockley Coombe and near Wells"; *Norman*.

Common on many old walls, and on moss-clad apple trees, in the Wincanton district!

Rejctamenta of the Brue, below Castle Cary!

Weston district; *F. A. Knight*.

Long Ashton; *E. C. Wheeler*.

Bath; *Jenyns Coll., Bath Museum*.

*South.*

Brympton, Yeovil, a few in the orchard; *J. Ponsonby*.

"Common in several orchards, under the loose pieces of bark from the apple trees, at Hatch Beauchamp, near Taunton"; *Wake-Bowell*.

Wellington; *W. Gyngell*.

CLAUSILIA LAMINATA, *Montagu*.

Widely distributed. Usually abundant in beech woods.

Var. *pellucida*, *Jeffreys*.

Stoke Bishop and Leigh Woods; *Cundall*.

"Avon Gorge, near Suspension Bridge, Somerset side"; *Bristol Mus. Coll.*

Var. *albina*, *Moquin-Tandon*.

Of frequent occurrence with the type.

Brockley Coombe; *Cundall*.

Leigh Woods; *Bristol Mus. Coll.*

Box Wood, Bath; *Clark*.

Coombe Down Wood, Bath; *Mrs. Oldroyd*.

Woolston, near Yarlinton!

Around an old lime-kiln, Clevedon; *Norman*.

Hatch Beauchamp, Taunton—three specimens; *Wake-Bowell*.

CLAUSILIA BIPLICATA, *Montagu*.

A very rare British species, occurring in not more than six of our southern counties. In Somerset it is apparently confined to the north-western district.

Leigh Woods; *W. W. Stoddart*, in *Leipner's list*.  
(Quoted, with a query, by *Cundall*.)

"Stated by *Miller* to exist in the neighbourhood of Bristol"; *Forbes and Hanley*.

Two specimens (living) were found together in a cranny in a wooden gate post at Sidcot, in Winscombe parish, in 1865; *F. A. Knight*.

*CLAUSILIA BIDENTATA*, *Ström* (= *Clausilia perversa*, *Pulteney* = *Clausilia rugosa*, *Draparnaud*).

Generally distributed, and abundant in all districts.

Var. *glacilior*, *Jeffreys*.

Leigh Woods; *Bristol Mus. Coll.*

Bratton St. Maur!

Var. *tumidula*, *Jeffreys*.

Brockley Coombe, Bristol; *Jeffreys*.

Milton Clevedon and Bratton St. Maur!

Var. *parvula*, *Turton*.

"Of this rare and elegant shell I found one specimen, which had the remains of the animal in it, among the rejectamenta of the Avon river, near Bristol"; *Gwyn Jeffreys*, in *Linn. Soc. Trans.*, 1833.

Var. *everetti*, *Miller*.

Bristol; *Miller*.

Leigh Woods; *Bristol Mus. Coll.*

Rejectamenta of Avon, and Mendip Hills, near Axbridge, not uncommon; *Norman*.

*CLAUSILIA ROLPHII* (*Leach in Turton*, 1831).

A very rare species. There are specimens in the Bristol Museum taken at Long Ashton. For many years this was the only known station for it in the county; but in 1906, when searching for *Ena montana* on the hills around Milton Clevedon, the writer found eight specimens near that village. They have been placed in the Haslemere Museum.

## SUCCINEIDÆ.

*SUCCINEA PUTRIS*, *Linné*.

Abundant in the margins of the rhines on the moors.

*North*.

Bath; *Jenyns Coll.*, *Bath Museum*.

Occasionally very large in Kenn Moor; *Norman*.

Yatton; *Bristol Mus. Coll.*

Brislington; *T. G. Ponton*.

Long Ashton; *Wheeler*.

Common on banks of the rhines on Pennard Moor !  
 Bratton St. Maur !  
 Monkton Coombe ; *Kenneth McKean*.  
 Weston district ; *F. A. Knight*.  
 Rhines about Meare !

*South.*

Yeovil ; *J. Ponsonby*.  
 Var. *albida*, *Mörch*.  
 Pennard Moor, near Glastonbury !

*SUCCINEA ELEGANS, Risso.*

Fairly common on the borders of streams, canals and ditches.

*North.*

Barrow Gurney ; *Bristol Mus. Coll.*  
 Weston district ; *F. A. Knight*.  
 Clevedon : *Miss L. C. Jones*.  
 Margins of stones on the moors around Glastonbury,  
 Shapwick, Highbridge, etc. !  
 Margins of streams in the Wincanton district !

*South.*

Brympton and Ilchester ; *J. Ponsonby*.  
 Var. *pfeifferi*, *Rossmüssler*.  
 "Found in ditches along the sea margin near Clevedon,  
 and in a few other places"; *Norman*.  
 Maxmills (?) ; *F. A. Knight*.  
 Var. *albida*, *Taylor*.  
 Near Bristol ; *Bristol Mus. Coll.*  
 In a quarry pool at Bratton St. Maur !

*SUCCINEA OBLONGA, Draparnaud.*

A rare species. Burnham (*Stoddart*, in *Leipner's* list, quoted as doubtful by *Cundall*). Mr. J. W. Taylor, in *Journ. Conch.* V, p. 84, records a single specimen, from drift collected from banks of the river Brue, near Glastonbury, by Mr. J. Morland.

There is no reason to doubt the presence of this species in the living state in the county of Somerset. It occurs in the dune marshes about Braunton Burrows, N. Devon ; and I am informed by Dr. H. P. Blackmore that it occurs at Alderbury, Wilts. (See my paper in the *Wiltshire Archæol.* & *N. H. Magazine*, Vol. XXXVI, on the Mollusca of Wiltshire.)



## AURICULIDÆ.

CARYCHIUM MINIMUM, *Müller*.

Generally distributed. Common amongst leaves and under sticks and stones in woods and hedges. Often occurring in large numbers in river drift. Mr. F. A. Knight observes<sup>1</sup> "The smallest British land shell, *Carychium minimum*, a species of no great rarity, but one that, on account of its extreme minuteness, is probably often overlooked, is, especially in some years, very plentiful under stones in damp places among the trees (in Weston Wood). Its size may be estimated from the fact that it took 105 specimens to cover a threepenny-piece, and that all these together weighed, when dead, exactly half-a-grain."

PHYTIA MYOSOTIS, *Draparnaud* (= *Melampus myosotis*, *Draparnaud*; *Alexia myosotis*, *Draparnaud*).

An estuarine species, to be found under stones immediately above high-water mark at the mouths of rivers.

*North.*

In the Avon, near Bristol; *Forbes and Hanley*.

Banks of the Avon, near Pill; *Cundall*.

Abundant in the Avon, below the Hotwells; *Norman*.

Var. *denticulata*, *Montagu* (= *Melampus denticulatus*, *Montagu*)

Banks of the Avon, near Pill; *Cundall*.

Var. *ringens*, *Turton*.

Banks of the Avon, near Pill; *Cundall*.

OVATELLA BIDENTATA, *Montagu* (= *Melampus bidentatus*, *Montagu*; = *Leuconia bidentata*, *Montagu*).

It frequents crevices of rocks, near high-water mark.

Banks of the Avon, near Pill; *Cundall* (with a query).

Var. *alba*, *Turton*.

Banks of the Avon, near Pill; *Cundall* (with a query).

## LIMNÆIDÆ.

ANCYLUS FLUVIATILIS, *Müller*.

On stones in streams and rivers. Sometimes attached to the larger bivalves. Always in running water. A somewhat

1. "The Sea-Board of Mendip," p. 137.

local species. Messrs. Kennard and Woodward record it from an alluvial deposit at Castle Cary.

*North.*

Portbury ; *Bristol Mus. Coll.*

Bath ; *Kenneth McKean.*

West Mead Rhine, Yatton ; and the river at Clevedon ;  
*Norman.*

River Cale, below Wincanton ; *W. Herridge.*

The Stour at Gaspar, and the Shepton Montague stream,  
near the bridge where the road to Bruton passes over it !

Weston district ; *F. A. Knight.*

Ashton ; *Wheeler.*

Clevedon ; *Miss L. C. Jones.*

Nailsea ; *Misses Hele.*

*South.*

Beer Crowcombe, near Taunton ; *Wake-Bowell.*

Between Minehead and Watchet ; *L. Adams and C.*  
*Oldham.*

Wellington ; *W. Gyngell.*

? Var. *capuloides*, *Jan.*

"Extraordinarily large specimens occur in a stream on  
the Quantocks, at Holford" ; *F. A. Knight.*

Var. *albida*, *Jeffreys.*

Wookey, near Wells ; *Bristol Mus. Coll.*

"Wookey Hole, near Wells (Beevor) ; *Gwyn Jeffreys.*

Foot of Dulcot Hill, near Wells ; *Norman.*

ACROLOXUS LACUSTRIS, *Linné* (= *Velletia lacustris*, *Linné* ;  
= *Ancylus lacustris*, *Linné*).

A very local species, frequenting stems and leaves of water  
plants in lakes, ponds, and canals ; never swiftly running  
streams.

*North.*

Ham Green ; *Cundall.*

Local. The Avon, near Bath ; *Norman.*

Bath ; *C. W. Viner.*

Worle, near Weston-super-Mare ; *Bristol Mus. Coll.*

River From ; *Miller.*

Weston district ; *F. A. Knight.*

*South.*

Hatch Park, Taunton ; *Wake-Bowell.*

Bridgwater ; *W. R. Crotch.*

River Tone, Taunton ; *W. Gyngell.*





### POND SNAILS (Genus *Limnæa*).

1, *L. stagnalis*, Linné, central shell immature; 2, *L. peregra*, Müller; 3, 4, *L. auricularia*, Linné; 5, *L. palustris*, Müller; 6, *L. glabra*, Müller; 7, *L. truncatula*, Müller, the secondary host of the "liver fluke" of sheep.

The differences, apart from size, are slight variations in the spire and aperture, the family likeness is unmistakable. There is phylogenetic evidence that *Limnæa peregra* (by far the commonest species) is the ancestral form from which all the others have been derived.

All were taken in the neighbourhood of Berrow.

*From a photograph by Dr. Roger Hutchinson, Haslemere.*

LIMNÆA AURICULARIA, *Linné*. (Plate V, 3, 4.)

Lakes, ponds and sluggish streams. Local.

*North.*

Bath Canal; *C. W. Viner*.

In the Froom; *Miller*.

Kennet and Avon Canal, near Bath; *H. Watson*.

River at Keynsham; *Misses Hele*.

Leigh Woods and Clevedon; *Cundall*.

Fish-ponds at Holbrooke, near Wincanton; *W. Herridge*.

River Cale, below Wincanton; *W. Galpin*.

Weston district; *F. A. Knight*.

Burnham; *W. Stoddart*.

Near Berrow!

*South.*

Taunton; *Crotch*.

Beer Crowcombe, near Taunton; *Wake-Bowell*.

Old Canal, Wellington; *W. Gynge*.

Var. *acuta*, *Jeffreys* (= *Limnæus acutus*, *Jeffreys*).

Among rejectamenta of the river at Uphill; *Norman*.

Var. *magna*, *Colbean*.

Fish-ponds at Holbrooke, near Wincanton; *W. Herridge*.

Var. *albida*, *Jeffreys*.

Bath; *Clark*.

LIMNÆA PEREGRINA, *Müller*. (Plate V, 2.)

Generally distributed. The commonest species of our fresh-water mollusca. Very variable in size and form.

Var. *lacustris*, *Leach*.

A rhine on Pennard Moor, near Glastonbury!

Var. *ovata*, *Draparnaud*.

Yatton; *Bristol Mus. Coll.*

Pond near Ashley Down; *Misses Hele*.

Var. *acuminata*, *Jeffreys*.

Among rejectamenta of the river at Uphill; *Norman*.

Var. *vulgaris*, *C. Pfeiffer*.

Shepton Montague, in a watercress bed!

Var. *succinæformis*, *Jeffreys*.

Rhines on Pennard Moor, near Glastonbury!

Var. *lutea*, *Montagu*.

Near Shepton Montague!

Var. *labiosa*, *Jeffreys*.

Fish-ponds at Holbrooke, near Wincanton; *W. Herridge*.



*LIMNÆA PALUSTRIS*, Müller. (Plate V, 5.)

A frequent species in marshes, margins of ponds and sluggish streams.

*North.*

Rhines about Glastonbury, Shapwick, Highbridge, etc. !

Weston district ; *F. A. Knight*.

Clevedon ; *Miss L. C. Jones*.

Ashton ; *Wheeler*.

Kenn Moor ; *Cundall*.

Bath Canal ; *Kenneth McKean*.

Bath ; *Jenyns Mus. Coll.*

*South.*

Middle Chinnoek, several ; *J. Ponsonby*.

Old Canal, Wellington ; *W. Gynge*ll.

Var. *elongata*. *Moquin-Tandon*.

Pennard Moor, Glastonbury !

Var. *conica*, *Jeffreys*.

Yatton ; *McMurtrie*.

Var. *roseolabiata*, *Jeffreys*.

Clevedon ; *Misses Hele*.

Yatton ; *Bristol Mus. Coll.*

*LIMNÆA TRUNCATULA*, Müller. (Plate V, 7.)

Generally distributed ; frequent on the banks of ditches, streams, canals and rivers. This species is of special interest in that one stage in the life history of an only too well known parasite, *Fasciola hepatica*, the cause of the dreaded liver rot or "fluke" of sheep, is spent upon it. *Fasciola hepatica* is a flat worm which, in the embryo stage, leads a free aquatic life. Passing into the body of the mollusc, it spends the sporocyst stage in the lung cavity. Next, what is known as the redia stage is passed in the viscera, chiefly the digestive gland. It then escapes from the snail and the free cercarian stage is spent upon grass, on which it encysts itself. The grass is eaten by sheep, and the mature sexual stage (*Distoma hepaticum*) is developed from the cercarian stage in the bile ducts. This snail is most abundant in marshy clay lands subject to periodic flooding. The infection of the sheep usually takes place during a wet autumn, and the disease is at its height in the succeeding winter. Three million sheep died of the "fluke" in England in the winter of 1879-80.

Var. *elegans*, *Jeffreys*.

Frequent with the type in the Wincanton district.

*LIMNÆA STAGNALIS*, *Linné*. (Plate V, 1).

Widely distributed in lakes, ponds, slow running streams and canals. Especially abundant in the moor rhines.

Var. *fragilis*, *Linné*.

Kennet and Avon Canal; *Cundall*.

Pennard Moor, near Glastonbury!

Var. *labiata*, *Jeffreys*.

Clevedon; *Cundall*.

Mons. *sinistrorsum*

Kenn Moor, near Clevedon; *Norman*.

*LIMNÆA GLABRA*, *Müller*.

Very rare.

"Messrs. Forbes and Hanley write of this *Limnæus*, 'It occurs in several of our southern counties, especially in Wilts and Somerset. We have never succeeded in finding it, and it should probably be looked for on the eastern side of the county.'" *Norman*.

I found two bleached shells in a ditch at Bratton St. Maur in 1890. Repeated searches failed to yield any more, and I concluded they were probably dropped there by birds. I searched the extreme east of the county very carefully between the years 1890-97 for this rare shell, but without success. Neither could I find it in Wilts, and its inclusion in the mollusca fauna of that county rests upon half-a-dozen specimens in the Haslemere Museum, collected at Great Bedwyn by the late Frederick Townsend, F.L.S., in the year 1850.

Gwyn Jeffreys, in *British Conchology*, 1862, remarks that it had been found in Wilts and Dorset, but makes no mention of Somerset. J. C. Mansel-Pleydell gives, in *Mollusca of Dorsetshire*, 1898, p. 22, five stations for it.

Since writing the above, I have found this species in a ditch near Berrow. An examination of the Bratton St. Maur station shows that the shells were found in a Holocene deposit.

*AMPHIPEPLEA GLUTINOSA*, *Müller* (= *Limnæa glutinosa*, *Müller*).

Very rare. The only Somerset record that I can find is that given in Vol. I (p. 102), of Gwyn Jeffreys' *British Conchology*, which reads, "in a ditch near Dunster Castle, in Somersetshire (Leach)." Jeffreys probably quoted from William Elford Leach's *Synopsis of the Mollusca of Great Britain*, London, 1852, a book I have not seen. J. C. Mansel-Pleydell

records it for Dorset (see *Mollusca of Dorsetshire*, p. 23), where he found it in Chamberlayne's river, Bere Regis.

*PLANORBIS CORNEUS*, *Linné*.

Ponds, canals and slow running streams. Locally abundant.

"Very abundant in the moor ditches; but rare, if not altogether absent, at higher levels. It delights in peaty water."  
*Norman*.

*North*.

Yatton and Clevedon; *Bristol Mus. Coll.*

Common in rhines on Pennard Moor! *Haslemere Mus. Coll.*

Weston-super-Mare; *T. Hincks*.

Weston district; *F. A. Knight*.

Brislington; *Stoddart*.

Kenn Moor; *Cundall*.

Bath Canal, very large; *Kenneth McKean*.

*South*.

"Beer Crowcombe, Taunton, three specimens," *Wake-Bowell*.

Var. *albina*, *Moquin-Tandon*.

Clevedon and Yatton; *Bristol Mus. Coll.*

Kenn Moor; *Cundall*.

Clevedon; *Misses Hele*.

Mon. *scalariforme*.

One specimen from a rhine on Pennard Moor.

*PLANORBIS ALBUS*, *Müller*.

Locally abundant.

*North*.

"Scarce. Found in a few rhines on Kenn Moor, and in a pond near Wells, also at Weston-super-Mare";  
*Norman*.

Grosvenor, Bath; *Mrs. Oldroyd*.

Bath; *Jenyns Coll., Bath Museum*.

River Stour, Gaspar!

Stream at Wincanton!

Rejectamenta of the Brue, near Castle Cary, and of streams at Bratton St. Maur and Shepton Montague!

Weston district; *F. A. Knight*.

Shell-bearing deposit at Dumball Island; *H. Bolton*.

*South.*

Beer Crowcombe, near Taunton, uncommon; *Wake-Bowell*.  
 Ilchester, Brympton, Yeovil; *J. Ponsonby*.  
 Pond at Wellington; *W. Gynnell*.

*Var. draparnaldi*, *Sheppard*.  
 Bristol; *Jeffreys*.

*PLANORBIS GLABER*, *Jeffreys* (= *Planorbis parrus*, *Say*).

This species is not common in our southern counties. I am acquainted with but two Somerset records:—Norman remarks in his List: "We have taken it, fine and in great abundance, in a large pond by the railway side at the third (?) bridge from Clevedon."

In Bolton's paper on a shell-bearing deposit at Dumball Island its occurrence at the Avonmouth Dock is noted.

(In Wilts it is known only from some specimens in the Haslemere Museum, collected by Townsend in the neighbourhood of Great Bedwyn in 1851).

*PLANORBIS CRISTA*, *Linne'* (= *Planorbis nautilus*, *Linne'*).

Widely distributed, on aquatic plants in ditches and ponds. There are two forms, often occurring together and equally abundant. In one the outer whorl has strong transverse ridges, in the other the shell is smooth. Some authorities give specific rank to the smooth form (as *P. nautilus*), and consider the ridged form as a variety (v. *crista*).

*North.*

Burnham; *Cundall*.

Common in the Wincanton district!

Weston district, very abundant in some rhines in early spring; *F. A. Knight*.

*South.*

Ilchester; *J. Ponsonby*.

*Var. lævigata*, *Adami*.

Common in the Wincanton district!

Ilchester; *J. Ponsonby*.

*PLANORBIS CARINATUS*, *Müller*.

A rare species, but it is possibly often passed over for the common *P. umbilicatus* which it resembles in stature, differing chiefly in having broader whorls and in being sharply keeled in the median line. According to Leipner it is common through-

out the Bristol district. Gwyn Jeffreys, in *British Conchology*, i, 90, remarks that it is a Somerset species. Cundall wrote, "‘common,’ (?) Kenn Moor." Norman's record reads :—" In the moor ditches, in company with *Planorbis marginatus*, but not common."

Weston district ; *F. A. Knight*.

Bath ; *Kenneth McKean*.

Ilchester, a few ; *J. Ponsonby*.

Wellington ; *W. Gyngell*.

*PLANORBIS UMBILICATUS*, Müller (= *Planorbis complanatus*, Jeffreys, and *Planorbis marginatus*, Draparnaud).

A frequent species in ponds and slow-running streams.

*North.*

Streams near Clevedon ; *Misses Hele*.

"Abundant in the rhines of all the moors, and common in ponds and ditches"; *Norman*.

Very common in rhines about Berrow, Highbidge, Shapwick, etc. !

Ditches at Harwood, near Wincanton ; *W. Herridge*.

Weston district ; *F. A. Knight*.

Kenn Moor ; *Cundall*.

Shell-bearing deposit at Dumball Island ; *H. Bolton*.

*South.*

Middle Chinnock and Ilchester ; *J. Ponsonby*.

Wellington ; *W. Gyngell*.

Var. *rhombea*, *Turton*.

Middle Chinnock ; *J. Ponsonby*.

*PLANORBIS VORTEX*, Linné.

Frequent in ponds and slow running streams.

*North.*

Yatton ; *Bristol Mus. Coll.*

Jenyns coll. ; *Bath Museum*.

"Very common on the whole of the western side of the county in rhines and ponds ;" *Norman*.

Harwood, near Wincanton !

Very abundant in rhines about Berrow, Shapwick and Meare !

Kenn Moor ; *Cundall*.

Weston district ; *F. A. Knight*.



Streams near Clevedon; *Leipner* and others.  
Bath Canal; *Kenneth McKean*.

*South.*

Brympton; *J. Ponsonby*.  
Wellington; *W. Gyngell*.

PLANORBIS SPIORBIS, *Linné*.

Common in ponds and slow-running streams in the northern part of the county, and presumably in the south also. Abundant amongst duckweed (*Lemna*), in many rhines on the Levels.

*South.*

Tintinhull; *J. Ponsonby*.  
Dulverton; *H. Watson*.

Var. *albida*, *Nelson*.

Pond by roadside, near Penselwood!

Var. *leucostoma*, *Michaud*.

Middle Chinnock, Vauxhall and Brympton; *J. Ponsonby*.

PLANORBIS CONTORTUS, *Linné*.

Frequent in ponds, lakes and ditches.

*North.*

Kenn Moor; *Cundall*.

Ashton; *E. C. Wheeler*.

Clevedon; *Leipner*.

Wincanton and Bruton districts!

Weston district; *F. A. Knight*.

Amongst *Lemna* and other floating weeds in rhines about Shapwick, Meare, etc.!

*South.*

Middle Chinnock; *J. Ponsonby*.

Wellington; *W. Gyngell*.

Var. *albida*, *Jeffreys*.

Weston-super-Mare; *Jeffreys*.

Yatton; *Bristol Mus. Coll.*

Middle Chinnock; *J. Ponsonby*.

Mons., *scalariforme*.

“Specimens from a small pond near Walton Old Church are distorted, having the whorls irregularly coiled, and often folded over each other.” *Norman*.

PLANORBIS FONTANUS, *Lightfoot* (= *Planorbis nitidus*, *Müller* of *Jeffreys*).

A local species frequenting ponds and sluggish streams.

*North.*

In a pond at Yatton, and another at Weston-in-Gordano ;  
*Norman.*

Grosvenor, Bath ; *Mrs. Oldroyd.*

Rejectamenta of Brue below Castle Cary, and in ponds  
and ditches at Holbrooke, near Wincanton ; *W. Her-*  
*ridge.*

Weston district ; *F. A. Knight.*

Rhines on the peat moors around Shapwick !

*South.*

Ponds at Hatch Park, Taunton ; *E. W. Wake-Bowell.*  
Brympton, Yeovil, Ilchester ; *J. Ponsonby.*

## PHYSIDÆ.

PHYSA FONTINALIS, *Linné.*

Generally distributed in ponds and slow-running streams.

Var. *albina*, *Jeffreys.*

Long Ashton ; *Bristol Mus. Coll.*

APLECTA HYPNORUM, *Linné* (= *Bullinus hypnorum*, *Linné*,  
and *Physa hypnorum*, *Linné*).

A local species.

*North.*

"Dulcot, near Wells ; Yatton ; ditch near the Pill, Cleve-  
don ; and Weston-super-Mare." *Norman.*

Weston district ; *F. A. Knight.*

Worle, near Weston-super-Mare ; *Bristol Mus. Coll.*

Long Ashton ; *Wheeler.*

A small pond at Holbrooke, near Wincanton ; *W. Her-*  
*ridge.*

Charlton Musgrove, near Wincanton !

Ditches at Harwood, near Wincanton ; *W. Galpin.*

Bath ; *Jenyns Coll., Bath Museum.*

*South.*

Yeovil, Middle Chinnoek ; *J. Ponsonby.*

Wellington ; *W. Gyngell.*

## PALUDESTRINIDÆ.

*PALUDESTRINA VENTROSA*, *Montagu* (= *Hydrobia ventrosa*, *Montagu*).

Frequents brackish water at the mouths of rivers.

Avonmouth; *Cundall*.

Shirehampton, in ditches; *T. G. Ponton*.

Avon, at Cook's Folly; *W. W. Stoddart*.

"In marvellous abundance in a ditch near the Pill, Clevedon"; *Norman*.

Weston-super-Mare; *F. A. Knight*.

*PALUDESTRINA STAGNALIS*, *Baster* (= *Hydrobia ulva*, *Pennant*).

An inhabitant of brackish waters; abundant in many places about Weston-super-Mare and Burnham. Mr. Bolton records it from a shell-bearing deposit at Dumball Island, Avonmouth; and Mr. Corder from the Burtle Beds at Wembdon.

River mouths on the Somerset coast; *Norman*.

Weston-super-Mare, abundant; *Leipner*.

Weston-super-Mare; *F. A. Knight*.

*BITHYNIA TENTACULATA*, *Linné*.

Generally distributed in ditches, streams and sluggish rivers. Messrs. Kennard and Woodward record it from an alluvial deposit at Castle Cary. It was also found in the peat at the Glastonbury Lake-village.

Var. *ventricosa*, *Menke*.

Bristol; *Jeffreys*.

*BITHYNIA LEACHII*, *Sheppard*.

Similar situations to the above but a much more local species. Mr. Bolton found it in a shell-bearing deposit at Dumball Island, Avonmouth.

*North*.

"In the larger and clearer streams; abundant and fine in West Mead Rhine, Yatton"; *Norman*.

Kenn Moor; *Cundall*.

River Avon; *Stoddart*.

Weston-super-Mare; *Crotch*.

Weston district; *F. A. Knight*.

Near Clevedon; *Bristol Mus. Coll.*

Pennard Moor, near Glastonbury !

Berrow !

Bath ; *Clark*.

Bristol ; *Jeffreys*.

*South*.

## VIVIPARIDÆ.

VIVIPARA VIVIPARA, *Linne* (= *Paludina vivipara*, *Linne*).

A very local species. I have seen specimens obtained in the neighbourhood of Dunster Castle, and there are shells from the Avon Canal in the museums of Bath and Bristol.

"Found dead on the shore, others naturalised at Winscombe"; *F. A. Knight*.

Rare in the pond at Henbury, and at Brislington, 1863 ;

*T. G. Ponton*.

The river at Keynsham ; *Misses Hele*.

In the Frome ; *Stoddart*.

Kennet and Avon Canal ; *Cundall*.

Var. *efasciata*, *Pickering* (= unicolor, *Jeffreys*).

Bath Canal ; *Bristol Mus. Coll.*

VIVIPARA CONTECTA, *Millet* (= *Paludina conlecta*, *Millet* ; *Paludina Listeri*, *Forbes and Hanley*).

A very rare species, of which only one record is known at present. "The Rev. W. R. Crotch and the Curator of the Bristol Museum inform us that they have taken this species near Weston-super-Mare. The latter met with it, we believe, near the railway station"; *Norman*. I failed to find it in the neighbourhood of Weston.

## VALVATIDÆ.

VALVATA PISCINALIS, *Müller*.

Generally distributed in ponds and sluggish streams. Messrs. Kennard and Woodward record it from an alluvial deposit at Castle Cary, and it was found in peat at the Glastonbury Lake-village.

Var. *acuminata*, *Jeffreys*.

River Avon, Bristol ; *Jeffreys*.

Taylor records (*Journ. Conch.*, iv, 173) the finding of a specimen at Yatton, by Miss F. M. Hele, which approached the var. *albina*.

VALVATA CRISTATA, *Müller*.

A more local species than the preceding, but not uncommon in the northern part of the county.

*North.*

Worle, near Weston-super-Mare; *Bristol Mus. Coll.*

"Very local, a few specimens from a ditch in Kenn Moor, also near Wells"; *Norman*.

Kenn Moor; *Cundall*.

Bath; *Clark*.

Bratton St. Maur; *W. Herridge*.

Rejectamenta of the Brue below Castle Cary; common in rhines on the moors about Glastonbury, and of frequent occurrence in ponds and ditches in the Wincanton district!

Weston district; *F. A. Knight*.

*South.*

Taunton; *Crotch*.

## POMATIIDÆ.

POMATIAS ELEGANS, *Müller* (= *Cyclostoma elegans*, *Müller*).

Widely distributed in the northern part of the county. The only British land mollusc with an operculated shell.

*North.*

Bristol district, general; *Cundall*.

"Common amongst limestone rocks at Bath, Yatton, Wrington, Brockley, Cheddar, Axbridge, Wells, Weston-super-Mare, Clevedon, etc."; *Norman*.

Stoke Trister, near Wincanton; Wadham's Down, Bratton St. Maur, a small colony; *W. Herridge*.

Abundant about Pitcombe, Bruton, and Milton Clevedon!

Weston district; *F. A. Knight*.

Jenyn's Coll., Bath Museum.

*South.*

Yeovil; *Ponsonby*.

Taunton and Minehead; *W. Gyngell*.

Var. *ochroleuca*, *Moquin-Tandon*.

With the type at Bratton St. Maur, Pitcombe, and Milton Clevedon!

Taunton; *W. Gyngell*.

Bath; *Kenneth McKean*.

Var. *fasciata*, *Picard*.

Bath; *Mrs. Oldroyd*.



## ACICULIDÆ.

*ACICULA LINEATA*, *Draparnaud* (= *Acme lineata*, *Draparnaud*).

A rare species, at present known chiefly from river drift. It should be looked for under stones in moist places in woods about Bruton and Castle Cary.

*North.*

Rejectamenta of the Avon below Bristol; *Jeffreys*, 1833.

Rejectamenta of the Brue below Castle Cary, and the stream at Ellescombe Wood, near Bratton St. Maur!

“Mr. Cutler, who lately was a dealer in Natural History specimens at Bath, has informed us that he has procured the species in a hazel copse below Hampton Rocks”; *Norman*.

Weston district; *F. A. Knight*.

Rejectamenta of Brue, near Glastonbury. A single specimen; *J. Morland*.

*South.*

Wood near Luccombe!

Var. *alba*, *Jeffreys*.

Rejectamenta of the Avon, Bristol; *Jeffreys*.

Rejectamenta of streams at Ellescombe Wood, near Bratton St. Maur!

Mons. *sinistrorsum*.

Rejectamenta of Avon at Bristol; *Jeffreys*.

## NERITIDÆ.

*NERITINA FLUVIATILIS*, *Linné*.

A local species. On stones in canals and streams. Common throughout the district (*Stoddart*, in *Leipner's Bristol list*).

*North.*

Avon at Bath; *Viner*.

Bath; *Jenyns*.

Bath Canal; *Bristol Mus. Coll.*

In pools near the Avon; *Miller*.

Weston-super-Mare; *Crotch*.

River Brue, near Glastonbury!

River Cale, below Wincanton; *W. Galpin*.

The Axe, Lox Yeo, Max Mills; *F. A. Knight*.

Brislington Common; *T. G. Ponton*.

Keynsham; *Misses Hele*.

*South.*

Bridgwater; *Crotch.*

River Yeo at Yeovil; *J. Ponsonby.*

Var. *cerina*, *Colbeau.*

There are specimens in the Bristol Museum from the Bath Canal, labelled "This rare variety of *N. fluviatilis* was discovered by Miss F. M. Hele, of Bristol, in 1882."

## DREISSENSIIDÆ.

### DREISSENSIA POLYMORPHA, *Pallas.*

An alien species, supposed to have been introduced into this country in or about the year 1824 with timber from Russia. Mr. Hugh Strickland, in a short paper on the naturalization of *Dreissena polymorpha* in Great Britain, contributed to the Magazine of Natural History in 1838 (vol. 11, new series), remarked that it had "lately been *planted* by Mr. Stuchbury, of Bristol, in some waters near that place." He considered that "it appears desirable to record these particulars, because it may interest some of our field-naturalists to watch the gradual spread of this species over the kingdom. Its propagation is so astonishingly rapid, that it will probably become, in a few years, one of our commonest British shells." Ten years later it had been reported from two counties in Scotland and thirteen in England. In the census list of British non-marine mollusca, published in 1902, it is given under twenty-five English counties and four Scotch.

Its absence from the Dumball Island deposit already alluded to (p. xiii), is of some interest. Mr. Bolton writes me that "at the time when the actual deposit was being made, Dumball Island was practically part of Somerset, only a narrow shallow channel separating it from the Somerset shore, whilst a deep channel, available for ships, separated it from the Gloucester shore. This is less than 100 years ago. The deep channel afterwards silted up entirely, and Dumball Island became attached to the Gloucester shore, whilst the shallow channel deepened in a similar fashion, and is now the only channel of the river." If the silting up took place after the 'planting' of *D. polymorpha* near Bristol in 1838, it is very probable that this species would have been found there. When was it first observed at Bath? It seems to have been unknown in Wilts prior to the sixties. "The *Dreissena* is perhaps better fitted for dissemination by man and subsequent establishment than

any other fresh-water shell; tenacity of life, unusually rapid propagation, the faculty of becoming attached by a strong byssus to extraneous substances, and the power of adapting itself to strange and altogether artificial surroundings, have combined to make it one of the most successful molluscan colonists in the world." (*H. Wallis Kew*, in "Dispersal of Shells," p. 219).

Jenyns Coll., Bath Museum.

Bath Canal; *Mrs. Oldroyd*.

River Avon, and Avon and Kennet Canal. Docks, etc.; *Cundall*.

In the Docks at Bristol; *T. G. Ponton*.

In the Avon; *Leipner*.

Kennet and Avon Canal; *Stoddart*.

Large specimens from the Kennet and Avon Canal, near Bath, one measuring 36 mm. by  $14\frac{1}{2}$  mm.; *H. Watson*.

## UNIONIDÆ.

### UNIO PICTORUM, *Linne*.

Common in rivers Avon and Brue.

#### *North.*

Naturalised in the Weston Rhine and the Lox Yeo;  
*F. A. Knight*. The specimens were brought from  
Langport.

Kennet and Avon Canal, River Avon; *Cundall*.

Bath; *Jenyns*.

Kennet and Avon Canal, near Bath; *H. Watson*.

River Brue, near Glastonbury!

#### *South.*

Taunton Canal; *W. Gyngell*.

Var. *compressa*, *Jeffreys*.

Bath Canal; *Mrs. Oldroyd*.

Var. *radiata*, *Moquin-Tandon*.

River Avon, Bristol; *Cundall*.

Avon, Bath; *Clark*.

### UNIO TUMIDUS, *Retzius*.

Frequent in the rivers Avon and Brue.

#### *North.*

Bath Canal; *Bath Mus.* *Jenyns Coll.*

Bristol; *Bristol Mus. Coll.*

Avon and Kennet Canal; *Cundall, Forbes and Hanley, Watson, and others.*

Avon, near Bristol; *Turton's Conchyliæ*, described under *Mysca solida*.

"We have found them in the Avon, many miles above and below its conflux with the Froome: at Bath they are thrown up in great abundance after floods, and commonly used for putting colours in"; *Montagu*.

"Twenty years ago, after a flood, I met with it about two miles from Bath, cast in large quantities on a river-side meadow, but I have seen none since"; *Clark*.

River Brue, near Street; *B. B. Woodward*.

Naturalised in the Weston Rhine and the Lox Yeo; *F. A. Knight*. The specimens were brought from Langport.

#### South.

Canal, Taunton, five specimens; *W. Gyngell*.

Var. *ovalis*, *Montagu*.

River Avon; *W. Stoddart*.

Bath; *Cundall*.

"This very strong variety is not uncommon in the Avon that runs through the north of Wiltshire and Somersetshire, inhabiting the deeper parts of the river"; *Turton*, described under *Mysca ovata*.

Var. *radiata*, *Colbeau*.

Avon and Kennet Canal; *Cundall*.

Avon, near Bath; *Clark*.

#### ANODONTA CYGNÆA, Linné.

Frequent in the rivers and the majority of the larger ponds. The largest of our fresh-water bivalves, often attaining six to seven inches in length.

#### North.

Fine specimens from the Bath Canal; *Bath Mus. Coll.*

Kennet and Avon Canal and Kenn Moor, etc.; *Cundall*.

Nailsea Moor and Yatton; *Bristol Mus. Coll.*

Shanks Pond, Cucklington; *W. Herridge*.

Kennet and Avon Canal, near Bath; *H. Watson*.

#### South.

Yeovil; *J. Ponsonby*.

Canal, Taunton, a rather peculiar broad straight variety; *W. Gyngell*.

Var. *anatina*, Linné (= *Anodonta anatina*, Linné).

Widely distributed, until quite recently was considered as a distinct species.

Avon at Bath ; *Bath Mus. Jenyns Coll.*

Common in the river Brue, about Bruton and Castle Cary !

Frequent in the Cale below Wincanton !

Kennet and Avon Canal ; *Cundall.*

River Brue, Lovington ; *W. Herridge.*

Kennet and Avon Canal, near Bath ; *H. Watson.*

Var. *arenaria*, Schröter.

Canal, Taunton ; *W. Gyngell.*

Var. *radiata*, Müller.

Bath Canal ; *Bristol Mus. Coll.*

Kennet and Avon Canal ; *Cundall.*

#### SPHÆRIUM RIVICOLA, Leach.

A local species.

##### *North.*

Bath Canal ; *Jenyns Mus. Coll.*

Keynsham ; *Misses Hele.*

Kennet and Avon Canal ; *Cundall.*

Cale at Harwood, below Wincanton ; *W. Galpin.*

Kennet and Avon Canal, near Bath ; *H. Watson.*

#### SPHÆRIUM CORNEUM, Linné.

Widely distributed in ponds, ditches, canals and rivers.

Var. *pisidioides*, Gray.

River Avon, Bath ; *Jordan.*

Streams near Clevedon, rare ; Streams near Weston-super-Mare ; *Miss Jessie Hele.*

In the Avon ; *W. Stoddart.*

Var. *scaldiana*, Norman.

Bath ; *Rich.*

Var. *nucleus*, Studer.

Clevedon ; *Leipner.*

Scarce in stream at Kewstoke, Weston-super-Mare ; *Miss Jessie Hele.*

Ilchester ; *J. Ponsonby.*

Var. *flavescens*, Macgillivray.

Clevedon ; *Miss L. C. Jones.*

Bath Canal, sides of Canal ; Rare in streams at Kewstoke, Weston-super-Mare ; *Miss Jessie Hele.*



SPHÆRIUM LACUSTRE, *Müller.*

In ponds, locally abundant.

*North.*

Bath ; *Bristol Mus. Coll.*

Bath ; *Jenyns.*

Avonmouth and Ham Green ; *Cundall.*

"Common in a pond on Clevedon Hill, not far from the Royal Hotel" ; *Norman.*

Ponds at Bratton St. Maur !

Weston district ; *F. A. Knight.*

Keynsham, in stream ; *Misses Hele.*

*South.*

Yeovil ; *Ponsonby.*

Taunton Canal ; *W. Gyngell.*

Var. *ryckholti*, *Norman.*

Vauxhall, near Yeovil ; *J. Ponsonby.*

SPHÆRIUM PALLIDUM, *Gray.*

Apparently a very rare and local species.

*North.*

Kennet and Avon Canal and River Avon ; *B. B. Woodward.*

There are specimens from the Bath Canal in the museum at Bath. It is also recorded from the Kennet and Avon Canal by Stoddart in Leipner's list.

Weston district ; *F. A. Knight.*

PISIDIUM AMNICUM, *Müller.*

Ponds, rivers, and canals. Locally abundant. Messrs. Kennard and Woodward record it from an alluvial deposit at Castle Cary, and I have seen it in peat at the Glastonbury Lake-village.

*North.*

Stream at Penselwood !

Ponds at Bratton St. Maur, and Brue below Castle Cary !

Weston district ; *F. A. Knight.*

Bath ; *Kenneth McKean.*

Clevedon and Nailsea ; *Misses Hele.*

Bath ; *Jenyns Coll.*

Ditches about Shapwick !

*South.*

No records forthcoming.

*PISIDIUM HENSLOWIANUM*, Sheppard.

Rare ?

*North.*Leigh Woods ; *Wheeler*.Kennet and Avon Canal ; *Stoddart*.Clevedon ; *Norman*.

Bratton St. Maur !

*PISIDIUM SUBTRUNCATUM*, Malm (= *Pisidium fontinale*, *Jeffreys*).

This species is probably not so rare as the records would lead one to expect.

*North.*Weston district ; *F. A. Knight*.Bath Canal ; *Kenneth McKean*.*South.*

Ditch near Minehead !

*PISIDIUM PULCHELLUM*, Jenyns.

Rare, except in the extreme north of the county.

There are specimens in the Museum at Bath that were collected by Jenyns in the vicinity of that city.

"In the larger and clearer of the rhines not uncommon : fine in West Mead Rhine, Yatton" ; *Norman*.

*PISIDIUM PUSILLUM*, Gmelin (= *Pisidium fontinale*, *Draparnaud*, of continental authors).

A small species which is probably often passed over for young of larger ones, and is presumably more widely distributed than the records indicate. Mr. Bolton found it in a shell-bearing deposit at Dumball Island, Avonmouth.

*North.*

"Common in grassy ditches, ponds and rhines. We have taken it of a very large size in the moor that stretches from Clevedon towards Portishead" ; *Norman*. (It may be inferred that the large specimens were the variety *grandis* ; *Adams*).

Avonmouth and Bedminster ; *Cundall*.Bath ; *Jenyns*.

Rhines about Highbridge and other places on the Levels ! Penselwood !

Weston district ; *F. A. Knight*.

*South.*

Ditches at Dunster and Minehead ; *L. E. Adams and Charles Oldham.*  
Dulverton ; *H. Watson.*

PISIDIUM NITIDUM, *Jenyns.*

Lakes and ponds. Local.

*North.*

"A large pond by the side of the railway at the third (?) bridge from Clevedon" ; *Norman.*  
River Brue at Street ; *B. B. Woodward's List.*  
Weston district ; *F. A. Knight.*

*South.*

Between Minehead and Watchet ; *Adams and Oldham.*

PISIDIUM OBTUSALE, *Pfeiffer.*

Shallow ponds and in ditches.

*North.*

Avonmouth ; *Cundall.*  
"In a ditch near the Pill, Clevedon ; also in the pond near the Royal Hotel" ; *Norman.*  
Kennet Canal ; *Stoddart.*

*South.*

Yeovil ; *J. Ponsonby.*

PISIDIUM GASSIESIANUM, *Dupuy* (= *Pisidium roseum*, *Jeffreys non Scholtz* ; = *Pisidium milium*, *Auctt. non Held*).

Ponds and pools. Uncommon.

*North.*

"In rhines near Burtle and also in a spring on Rowberrow Warren, near the south foot of Dolbury Camp ; *F. A. Knight.*  
Weston district ; *F. A. Knight.*  
In the larger rhines about Shapwick, Highbridge, etc. !

*South.*

Between Minehead and Watchet ; *Adams and Oldham.*  
Ditch at Dunster in association with *P. fontinale* ; *Adams and Oldham.*

## MARINE.

## NUCULIDÆ.

NUCULA NUCLEUS, *Linné*.

Weston and Burnham. Frequent !  
Clevedon ; *J. W. Cundall*.

## ANOMIIDÆ.

ANOMIA EPHIPPium, *Linné*.

A variable species. "In consequence of the lower valve being moulded on the extraneous bodies to which it is attached by the plug, the upper valve partakes of a corresponding impression, and the result is that the shell puts on a Protean variety of shape. Bouchard-Chautereaux says that out of two hundred specimens it is almost impossible to find two exactly alike. When a specimen is affixed to a Pecten, Astarte, or other ribbed shell, it is similarly sculptured. No less than thirty-four species have been made out of the one now described ; and naturalists of every country have had a hand in this wholesale manufacture" ; *Gwyn Jeffreys*.

Weston, Burnham, Minehead !

## ARCIDÆ.

GLYCYMERIS GLYCYMERIS, *Linné* (= *Pectunculus glycymeris*, *Linné*).

The "Dog-cockle" of Da Costa. A gregarious species, generally diffused on sandy shores ; not common on the Somerset coast.

Between Brean and Burnham !

## MYTILIDÆ.

MYTILUS EDULIS, *Linné*.

The common mussel. A favourite article of food in this and many other maritime countries. Frequent in the raised beaches and in the Burtle deposits. Mr. H. Corder reports its occurrence in the Burtle Beds at Perry Green, Wembdon.

About Weston-super-Mare and Burnham !

*VOLSELLA BARBATA*, *Linné* (= *Mytilus barbatus*, *Linné*).

Distinctive in the byssus, which resembles a bundle of fine tow.

Minehead. Uncommon !

Occasionally washed ashore between Brean and Burnham !

## PTERIIDÆ.

*PINNA FRAGILIS*, *Pennant* (= *Pinna rudis*, *Linné*).

The "fan mussel" is one of our largest native shells, sometimes fifteen inches long and eight inches in breadth. I found a single specimen of moderate size amongst the débris on the foreshore beyond Birnbeck Cove, Weston-super-Mare, in June, 1910.

## OSTREIDÆ.

*OSTREA EDULIS*, *Linné*.

The common oyster. It has been found in the raised beach at Woodsprings Hill, Weston, and Mr. Corder has notified its presence in the Burtle Beds at Perry Green, Wembdon. The dead shells, often bored by a species of sponge (*Cliona*), are frequent throughout the coast. Some more or less cylindrical forms which have been observed near Minehead come near to the variety *deformis*, *Lamarck*.

## PECTINIDÆ.

*PECTEN MAXIMUS*, *Linné*.

The "grand-pélerine" or "palourde" of the fish markets of Northern France. Jeffreys remarks of it: "If the oyster is the king of the mollusks, this has a just claim to the rank and title of prince."

Coast between Brean and Berrow. Rare !

*PECTEN PUSIO*, *Linné*.

An odd valve on the shore at the extremity of Brean Down !

*PECTEN VARIUS*, *Linné*.

Not common. A form of this species was at one time given specific rank under the name of *P. niveus*; *Macgillivray*. Gwyn Jeffreys wrote: "I believe this varietal difference arises from habitat. The strong and few-ribbed *P. varius* lives on oyster-banks and rough ground on an exposed coast; while



the delicate and many-ribbed *P. niveus* is only found in sheltered locks and arms of the sea, moored by its strong byssus to the upper surface of the broad and smooth fronds of *Laminaria*." He also thought that the "variety *purpurea* forms another link in the chain of specific identity."

The type and both varieties occur on the Somerset coast about Minehead and Weston-super-Mare.

Mr. J. T. Marshall records in the *Journal of Conchology*, VIII. 340, the occurrence of the var. *purpurea* in the Bristol Channel, measuring three inches in length and  $2\frac{1}{2}$  inches in breadth.

Type, coasts about Weston. Rare; *F. A. Knight*.

About Burnham and Berrow, rare, odd valves only!

#### PECTEN OPERCULARIS, *Linné*.

The commonest representative of the genus on our coast; easily distinguished from either of the preceding by its circular form, almost equal ears, and greater stature.

Burnham, Minehead, Weston. Uncommon!

### ASTARTIDÆ.

#### ASTARTE SULCATA, *Da Costa*.

I found what appeared to be a worn valve of this species on the shore near Birnbeck Cove, Weston-super-Mare. It is not common in the south, excepting Milford Haven.

#### CYPRINA ISLANDICA, *Linné*.

Sands about Bream and Burnham!

### LUCINIDÆ.

#### LORIPES LACTEUS, *Linné*.

A characteristic species of our muddy and sandy coasts.

Weston-super-Mare and Burnham!

#### LUCINA BOREALIS, *Linné*.

Another lover of muddy gravel and sand.

Burnham. Uncommon!

#### THYASIRA FLEXUOSA, *Montagu* (= *Axinus flexuosus*, *Montagu*).

Frequents soft mud and sand. "Young shells are globular, and the principal fold on the posterior side is visible in every

stage of growth. . . . The attachment of the ligament to the hinge is slight, which accounts for single valves being so frequently thrown up on the shore, or taken by the dredge in sandy bays"; *G. Jeffreys*.

Coasts about Burnham and Weston-super-Mare!

## LEPTONIDÆ.

*LASÆA RUBRA*, *Montagu*.

Birnbeck Cove!

## SCROBICULARIIDÆ.

*SYNDOSMYA ALBA*, *Wood* (= *Scrobicularia alba*, *Wood*).

Weston-super-Mare!

It is not infrequent in the Burtle Beds.

*SCROBICULARIA PLANA*, *Da Costa* (= *Scrobicularia piperata*, *Bellonius*).

Frequent at low-water mark in mud and clay. Mr. Herbert Bolton found it in a holocene deposit at Dumball Island, Avonmouth.

Weston-super-Mare; *F. A. Knight*.

Between Berrow and Burnham!

## TELLINIDÆ.

*TELLINA CRASSA*, *Gmelin*.

Between Brean and Berrow!

*TELLINA TENUIS*, *Da Costa*.

Abundant along the coast in many parts. It occurs in the raised beach at Birnbeck Cove.

About Burnham and Berrow flats!

Weston-super-Mare; *F. A. Knight*.

*MACOMA BALTHICA*, *Linne'* (= *Tellina Balthica*, *Linne'*).

This is one of the commonest shells on the sands at Weston and between Brean and Burnham. It also occurs in the raised beaches at Woodspring Hill. Mr. Bolton has recorded it from a holocene deposit at Dumball Island, Avonmouth; and Mr. H. Corder informs me that he has found it in the Burtle Beds exposed by a roadside ditch at Perry Green, Wembdon.

According to the Conchological Society's List of British Marine shells, the type as it now stands is the var. *attenuata* of Jeffreys (see Vol. II, "British Conchology," p. 376), and what was formerly considered as the type is the var. *carriaria*, Pennant. The colour is very variable, "of all hues and shades, from milk-white to yellow or crimson, often relieved by narrow zones or concentric belts of a deeper tint, rarely pink in the earlier stages of growth and abruptly becoming white afterwards."

The var. *nivea*, Jeffreys, shell smaller and more compressed than the type, snow-white, is not infrequent on the coast about Weston-super-Mare.

### MACTRIDÆ.

SPISULA SOLIDA, Linné (= *Mactra solida*, Linné).

Weston-super-Mare. Uncommon !

LUTRARIA ELLIPTICA, Lamarch.

Frequent in soft and slushy sand. The following observations by Montagu may be useful to those who wish to obtain living specimens:—"It is rarely obtained alive, except by digging, and that only when the tide is unusually low: their place of concealment is generally known by a dimple on the surface, through which they eject water to a considerable height, though the shell is frequently buried two feet beneath."

About Weston, and the coast between Brean and Burnham !

### VENERIDÆ.

LUCINOPSIS UNDATA, Pennant.

About Burnham. Rare !

DOSINIA LUPINA, Linné (= *Venus linctæ*, Pulteney).

Same locality as the preceding. Rare !

VENUS GALLINA, Linné.

Between Burnham and Brean. Rare !

TAPES VIRGINEUS, Linné.

Burnham, Weston-super-Mare !

## CARDIIDÆ.

CARDIUM ECHINATUM, *Linné*.

About Burnham and Minehead !

CARDIUM EDULE, *Linné*.

Our commonest representative of the genus. It occurs in all the raised beaches about Weston-super-Mare, and Mr. Corder reports its occurrence in the Burtle deposit at Wembdon.

Weston-super-Mare ; *F. A. Knight*.

About Berrow Sands and Burnham, Minehead, etc. !

## GARIDÆ.

GARI DEPRESSA, *Pennant* (= *Psammobia vespertina*, *Chemnitz*).

The name *vespertina* is derived from the resemblance of the radiating coloured streaks on the shell to the rays of the setting sun. It is both regrettable and absurd that this well-established name is not allowed to stand.

Weston-super-Mare. Uncommon !

## MYIDÆ.

CORBULA GIBBA, *Olivi*.

Gregarious in sand and mud.

About Burnham and Weston-super-Mare !

## SOLENIIDÆ.

ENSIS ENSIS, *Linné* (*Solen ensis*, *Linné*).

The lesser razor-shell, described by Gwyn Jeffreys as "resembling in shape a French bean with the ends cut off"; he was alluding to the pod, not a single bean.

I have seen a few valves on the flats near Burnham.

ENSIS SILIQUA, *Linné* (= *Solen siliqua*, *Linné*).

The common razor-shell, so called from its shape ; frequent on all sandy shores.

About Burnham and Weston-super-Mare !

## SAXICAVIDÆ.

SAXICAVA RUGOSA, *Linné*.

"On every part of our coast, from the Shetland to the Channel Isles, where there is limestone, chalk, or new-red

sandstone, all of which this species excavates. . . . The extent of its geographical range is almost unparalleled in the history of the Mollusca. It appears to have spread over the greater part of the globe, from one pole to the other"; *Gwyn Jeffreys*. An insignificant looking species, but of great interest on account of its boring propensities.

Clevedon and Minehead !

### PHOLADIDÆ.

*PHOLAS DACTYLUS*, *Linné*.

This species bores into chalk, slate rock, new-red sandstone, marl, peat and submarine wood in the South of England, Bristol Channel, etc., burying itself 8, 10, or even 12 inches.

Clevedon !

*BARNEA CANDIDA*, *Linné* (= *Pholas candida*, *Linné*).

Differs from the preceding in being more convex and thinner, and having a single shield instead of four.

Weston-super-Mare ; *F. A. Knight*.

### TEREDINIDÆ.

*TEREDO MEGOTARA*, *Hanley*.

This species is found not infrequently in floating timber (fir) washed ashore during the equinoctial gales on various parts of our coast, including the Bristol Channel.

### DENTALIIDÆ.

*DENTALIUM VULGARE*, *Da Costa* (= *D. tarentinum*, *Lamarck*).

Weston-super-Mare !

### PATELLIDÆ.

*PATELLA VULGATA*, *Linné*.

The common limpet. On rocks and stones between tide-marks ; one of the commonest and most plentiful of British marine shells. Much prized as an article of food by pre-historic man : shells are abundant in "kitchen middens" on the coast in many parts of Britain. Mr. St. George Gray records it from the excavations at Wick Barrow, Stogursey. Mr. Joseph Sinel records<sup>1</sup> some experiments which he carried

1. "Outline of the Natural History of our Shores," p. 203.



out with a view to ascertain the actual force with which a limpet clings to the rock: "It was found that limpets with the base one inch and a quarter by one inch—that is, giving an area of somewhat less than a square inch—came off at a pull of *seventy pounds*! Larger and smaller examples at the same proportion—that is, that the force by which they hold is nearly five times what would be the case if they held by suction only. Whether the rock was smooth (water-worn basalt) or somewhat rough (disintegrating granite) made no difference whatever."

Weston-super-Mare, Burnham, Clevedon, etc.!

### PLEUROTOMARIIDÆ.

FISSURELLA GRÆCA, *Linné*.

Called, by Petiver, the "thimble limpet," possibly from its being open at the top, like a tailor's thimble.

Clevedon!

### TROCHIDÆ.

GIBBULA CINERARIA, *Linné* (= *Trochus cinerarius*, *Linné*).

Mr. Corder records it from the Burtle Beds at Perry Green, Wembdon.

Weston-super-Mare!

GIBBULA UMBILICATA, *Montagu* (= *Trochus umbilicatus*, *Montagu*).

Burnham!

CALLIOSTOMA ZIZYPHINUS, *Linné* (= *Trochus zizyphinus*, *Linné*).

Clevedon!

### LITTORINIDÆ.

LACUNA PARVA, *Da Costa* (= *Lacuna puteolus*, *Turton*).

On small seaweeds at low-water mark. Jeffreys records it for the Bristol Channel.

Clevedon!

LITTORINA OBTUSATA, *Linné*.

Mr. H. Bolton records its occurrence in the shell-bearing gravel at Dumball Island, Avonmouth.

Weston-super-Mare; *F. A. Knight*.

About Burnham, Minehead, etc.!

*LITTORINA NERITOIDES, Linné.*

Gwyn Jeffreys observes concerning this common species, that it is probably the only kind of *Littorina* common to the north and extreme south of Europe. Mr. Corder records it from the Burtle Beds at Perry Green, Wembdon.

Between Burnham and Brean, Minehead, etc. !

*LITTORINA RUDIS, Maton.*

Common, very plentiful on stony beaches. Mr. Bolton found it in the holocene deposit at Dumball Island, Avonmouth.

Weston-super-Mare ; *F. A. Knight.*

Minehead !

*LITTORINA LITTOREA, Linné.*

One of the commonest representatives of the genus. Jeffreys observes that the old English name of "periwinkle" is supposed to have been a corruption of petty winkle or wilk. Mr. H. Corder records it from the Burtle Beds at Perry Green, Wembdon.

Weston-super-Mare ; *F. A. Knight.*

## RISSOIDÆ.

*RISSEA PARVA, Da Costa.*

Minehead !

*ONOBIA STRIATA, J. Adams (=Rissoa striata, J. Adams).*

Common under stones and amongst seaweeds.

Weston-super-Mare ; *F. A. Knight.*

## ASSIMINEIDÆ.

*PALUDESTRINA STAGNALIS, Baster (=Hydrobia ulva, Pennant).*

This species occurs in extraordinary numbers on the mud flats at the mouths of all our tidal rivers. Mr. Corder records it from the Burtle Beds at Wembdon ; and Mr. Bolton, from a shell-bearing gravel at Dumball Island, Avonmouth.

Weston-super-Mare ; *F. A. Knight.*

"River mouths on the Somerset coast" ; *Norman.*

*PALUDESTRINA VENTROSA, Montagu (=Hydrobia ventrosa, Montagu).*

Abundant in brackish waters.

“Avonmouth, Shirehampton and Cook’s Folly”; *Cundall*.

“In marvellous abundance in a ditch near the Pill, Clevedon”; *Norman*.

Weston-super-Mare; *F. A. Knight*.

## HOMALOGYRIDÆ.

HOMALOGYRA ATOMUS, *Philippi*.

Shell resembling in shape that of *Planorbis corneus*, but very minute.

Weston-super-Mare !

## CYPRÆIDÆ.

TRIVIA EUROPÆA, *Montagu* (= *Cypræa europæa*, *Montagu*).

The European cowry. In the young state the shell is spiral. Frequent on stony ground. Shells have been rarely found on the coast about Weston-super-Mare; these, like the majority of the shells found on this coast, are dead ones washed in from the laminarian zone.

Weston-super-Mare. Rare; *F. A. Knight*.

## NATICIDÆ.

NATICA CATENA, *Da Costa*.

Mr. H. Corder lists it from the Burtle Beds at Perry Green, Wembdon, near Bridgwater.

Near Burnham !

## LAMELLARIIDÆ.

LAMELLARIA PERSPICUA, *Linné*.

Minehead !

VELUTINA LÆVIGATA, *Pennant*.

Minehead !

## CERITHIIDÆ.

BITTIUM RETICULATUM, *Da Costa* (= *Cerithium reticulatum*, *Da Costa*).

Clevedon !

CERITHIOPSIS TUBERCULARIS, *Montagu*.

Clevedon and Minehead !

## SCALIDÆ.

SCALA CLATHRUS, *Linné* (= *Scalaria communis*, *Lamarck*).

An inhabitant of the Bristol Channel. Dead shells are occasionally washed on the Somerset shore.

Clevedon !

## PYRAMIDELLIDÆ.

ODOSTOMIA UNIDENTATA, *Forbes and Hanley*.

Minehead !

ODOSTOMIA PLICATA, *Montagu*.

Clevedon !

TURBONILLA LACTEA, *Linné* (= *Odostomia lactea*, *Linné*).

Birnbeck Cove, Weston-super-Mare !

## EULIMIDÆ.

EULIMA POLITA, *Linné*.

A common species in muddy sand.

Weston-super-Mare, and about Burnham !

## TURRITELLIDÆ.

TURRITELLA COMMUNIS, *Lamarck* (= *T. terebra*, *Linné*).

Weston-super-Mare !

## BUCCINIDÆ.

BUCCINUM UNDATUM, *Linné*.

The common whelk. Common, in "every kind of ground, in all parts of the British seas, from the shore to the greatest known depth." Frequent in the raised beaches about Weston, and in the Burtle Beds at Wembdon and elsewhere.

Weston-super-Mare ; *F. A. Knight*.

Burnham, Minehead, etc. !

## MURICIDÆ.

OCINEBRA ERINACEA, *Linné* (= *Murex erinaceus*, *Linné*).

Mr. Corder has found it in the Burtle Beds at Perry Green, Wembdon.

Weston-super-Mare ; *F. A. Knight*.

Burnham and Clevedon !

PURPURA LAPILLUS, *Linné*.

Mr. H. Corder records it from the Burtle Beds at Perry Green, Wembdon.

Weston-super-Mare; *F. A. Knight*.

Burnham, Clevedon, Minehead, etc.!

The var. *elongata*, *S. Wood* (= *gracilis*, *Jordan*), has been recorded from Burnham by Bell, Jordan and others.

J. T. Marshall, in *Journ. Conch.*, vol. XIII, p. 195-196.

## NASSIDÆ.

NASSA RETICULATA, *Linné*.

The "small lattic'd whelk" of old authors. Common in sand at low-water mark throughout the British coasts. Mr. Corder records it from the Burtle Bed deposit at Perry Green, Wembdon.

Weston-super-Mare, Burnham, Clevedon, etc.!

## PLEUROTOMIDÆ.

BELA TURRICULA, *Montagu* (= *Pleurotoma turricula*, *Montagu*).

Weston-super-Mare!

BELA RUFA, *Montagu* (= *Pleurotoma rufa*, *Montagu*).

Weston-super-Mare and Clevedon!

HAEDROPLEURA COSTATA, *Da Costa* (= *Pleurotoma septangularis*, *Montagu*).

Clevedon!

MANGILIA GRACILIS, *Montagu* (= *Defrancia gracilis*, *Montagu*).

Weston-super-Mare!

## TORNATINIDÆ.

TORNATINA TRUNCATULA, *Brugière* (= *Utriculus truncatulus*, *Brugière*).

Clevedon!

TORNATINA OBTUSA, *Montagu* (= *Utriculus obtusus*, *Montagu*).

Frequent in muddy estuaries and brackish waters. Mr. Corder reports it from the Burtle deposit at Perry Green, Wembdon.

Weston-super-Mare and Burnham!

Clevedon; *J. W. Cundall*.



## SCAPHANDRIDÆ.

SCAPHANDER LIGNARIUS, *Linné*.

Weston-super-Mare !

BULLINELLA CYLINDRACEA, *Pennant* (= *Cylichna cylindracea*, *Pennant*).This species frequent in muddy sands on all our coasts is the *Cylindrella alba* of Swainson.

Weston-super-Mare !

## PHILINIDÆ.

PHILINE APERTA, *Linné*.

This well-known British species is said by Gwyn Jeffreys to attain its largest dimensions in the Bristol Channel.

AURICULIDÆ.<sup>1</sup>LEUCONIA BIDENTATA, *Montagu* (= *Melampus bidentatus*, *Montagu*).This species, the *Conorulus bidentatus* of Forbes and Hanley (IV, p. 191), is not uncommon at the mouth of the Avon."Banks of the Avon near Pill" ; *Cundall*.Var. *alba*, *Turton*.Banks of the Avon near Pill ; *Cundall*.ALEXIA DENTICULATA, *Montagu* (= *Melampus denticulatus*, *Montagu*).It is the *Melampus myosotis*, *Draparnaud*, var. *ringens*, *Turton*, which has been juggled into the above name ! Forbes and Hanley record that "it is found in many localities, especially on the southern and western coasts of England," and mention the Avon, near Bristol."Banks of the Avon near Pill" ; *Cundall*.Var. *myosotis* *Draparnaud* (= *Melampus myosotis*, *Draparnaud*)."Banks of the Avon near Pill" ; *Cundall*.

1. The brackish-water members of this family are included by the Conchological Society in both their published lists of British Mollusca (marine and non-marine), but under different generic names ! See *Auriculidæ* in the non-marine section of this paper, and note the absurd juggling of names ! It is unfortunately a matter of common knowledge that these farcical re-christenings are taking place constantly in all departments of natural science.

## INTRODUCED SPECIES.

UNSUCCESSFUL attempts have been made from time to time to introduce *Helix pomatia* into Somerset. Mr. Francis Knight informs me that he brought specimens from Bavaria in 1878 and turned them out in three places on Mendip. In his "Seaboard of Mendip" he observes that *H. pomatia* was "found in 1902 on Callow and near Cross. Perhaps descendants of specimens introduced in 1878." Specimens in the museum at Weston-super-Mare are said to have been taken in Weston Wood, but it cannot be doubted that they had been introduced there.

Many years ago I brought many specimens of *H. pomatia* and *H. cantiana* from Doddington, Kent, and turned them out on the Inferior Oolite at Bratton St. Maur. None of the latter were observed the following year or afterwards, and two years later only a dead shell of *H. pomatia* was forthcoming from the hedgebank in which they were placed. It is curious that *H. cantiana* did not survive, as it is abundant in some parts of the county.

Miss Hele informed Mr. John Taylor in 1881 that *Helicigona arbustorum* "is a difficult species to introduce into a fresh district,—I have again and again taken them from Bath and liberated them in different hedges round Bristol, but always unsuccessfully."

Mr. F. Knight brought *Unio tumidus* and *Unio pictorum* from Langport and turned them out on Western and at Maxmills; he also brought *Neritina fluriatilis* from the Brue to Weston Moor, and informs me that *Vivipara vivipara* is naturalised at Winscombe.

There are examples of *Physa heterostropha*, Say, in the Jenyns Collection at Bath Museum, which were taken from a pond near that city. This species is an alien closely allied to if not identical with *Physa acuta*, Draparnaud, another alien which flourishes in one of the lily tanks at Kew, in warm water from a mill at Aberdeen, and a few other localities.

Concerning unsuccessful attempts at colonisation, Mr. H. Wallis Kew observes ("Dispersal of Shells," p. 183):—"It must be remembered that when thus carried by man they are generally put down in districts already well stocked, and the creatures in such cases are obviously less likely to survive than those which happen to be transported by natural means to poorly stocked regions or to newly formed and unoccupied islands."

## ERRONEOUS RECORDS.

THE author of the article on Mollusca in the *Victorian History of Somerset* (I, 71) writes :—" Amongst records which cannot be accepted are those of *Vertigo substriata*, *V. alpestris*, *Succinea oblonga*, and *Assiminea grayana*. The last-named form is strictly confined to the Thames estuary, and its occurrence in a Somerset list must be due to a mis-identification. *Succinea oblonga* has only been doubtfully recognised amongst rejectamenta of the Brue, and if correct the specimen probably came from a Pleistocene deposit. *Vertigo substriata* is a mistaken identification of Miller's record of *Turbo serdentatus*, which is *Vertigo antivertigo*, while *V. angustior* comes from a Gloucestershire locality."

If *V. angustior* is to be excluded on those grounds then we must also leave out *V. pusilla*, for both were obtained by Gwyn Jeffreys from rejectamenta of the Avon at Bristol. Certainly *Vertigo substriata* must be omitted. Through carelessness in not carefully looking up the record, I gave this species a place in my paper on Somerset Mollusca in the *Journal of Conchology*. For note concerning *Succinea oblonga* see p. 44.

*Assiminea grayana* is recorded for the Weston district by Mr. Francis Knight, and appears in many of the old lists of Somerset mollusca. Apparently Leipner was the first to assert that this species occurs in the Somerset Avon (see his list in which he gives it for ditches at Avonmouth). Cundall thought its inclusion to have been "in all probability the result of accident or error." I wrote to Mr. Knight about the Weston record and he replied : " With reference to *Assiminea grayana*, which I notice you do not admit except from the Thames, I had specimens from the shore at Uphill which were identified by a good conchologist, the late William Robinson, who, by the way, certainly obtained them elsewhere than the Thames estuary." In a further communication he remarked : " My reputed Uphill ones have not survived, and it will probably be wise not to accept them without more confidence." All the evidence is against the occurrence of this species in the West. It must be excluded.

A very curious *Arion*, which I found on a lawn at Wainsgrove, Grosvenor Square, Southampton, was figured and described by W. E. Collinge as a new species under the name of *Arion elongatus*, in the *Annals and Mag. of Nat. Hist.*, 1894,

p. 66, pl. 5A. Unfortunately the author stated that it was found at Wainsgrove, Somerset. The locality is rightly given in my paper on the variation and distribution of British Slugs in the second volume of the *Naturalists' Journal*, but it seems to have escaped the notice of subsequent writers on the British *Arionidæ*, and the error has been most unfortunately perpetuated by Taylor in his *Monograph* (II, 215), where it is recorded from Somerset under the name of *Arion hortensis*, var. *fasciata*, form *elongata*; and by Woodward, in the list in the *Victoria History of Somerset*, in which its specific rank is retained.

The appearance of *Cylichna alba*, a northern species, in Mr. F. Knight's list of Weston shells is probably due to a confusion of names. I imagine *Cylindrella alba*, Swainson (= *Cylichna cylindracea*, Pennant), is intended.

## ADDENDA.

MR. H. L. F. GUERMONPREZ, of Bognor, writes :—" I find a list of Mollusca in a Clevedon Guide, copied from the *Clevedon Mercury* by Miss Lily Grey. It enumerates—

- Bithynia tentaculata*, ditches.
- Planorbis corneus*.
- „ *vortex*.
- „ *marginatus*.
- Limnæa peregra*.
- Helix aspersa*.
- „ *arbustorum*.
- „ *lapicida*, Walton Village.
- „ *virgata*, Court Hill.
- „ *caperata*.
- „ *erivetorum*.
- „ *revelata*.
- Buliminus obscurus*.
- Zua lubrica*.
- Cyclostoma elegans*.
- Anodonta cygnæa*.
- Littorina rudis*.
- „ *littoralis*, Clevedon Pill.
- Cardium edule*.
- Buccinum undatum*.
- Purpura lapillus*, under Church Hill."

The list is noteworthy in one particular, *viz.*, the record of *Hygromia revelata* for Somerset. This is a Lusitanian species occurring only (as far as Great Britain is concerned) in Devon and Cornwall. Wishing to obtain confirmation of the record I wrote to the Editor of the *Clevedon Mercury*, who replied : "The *Helix revelata* is mentioned in a Clevedon Guide published 30 years ago, the writer of which has been dead for some considerable time. Presumably 'Lily Grey,' who communicated this information to the *Clevedon Mercury* previous to that date, is dead also. Anyway we do not know her present address." It is probable that the shell in question was *Hygromia fusca*, for it is very unlikely that *H. revelata* occurs in North Somerset.



*Vitrea radiatula* was taken by Mr. Norman G. Hadden near Buncombe Roads in September, 1911.

There are small specimens of *Helicigona lapicida* (=var. *minor*, Moquin-Tandon) from Weston-super-Mare, in the British Museum.

Mr. John Taylor, in Part 19 of his *Monograph*,<sup>1</sup> describes and illustrates under the name of *fasciata* a new variety of *H. lapicida*, in which the shell shows spiral banding. In one form of it the band is single, and below the periphery (=subvar. *infrafasciata*), Taylor gives an illustration of a specimen found by the Rev. S. Spencer Pearce at Wells. The same form was taken in 1878 by Miss F. M. Hele in Leigh Woods.

1. Published February 16th, 1912. See p. 409.

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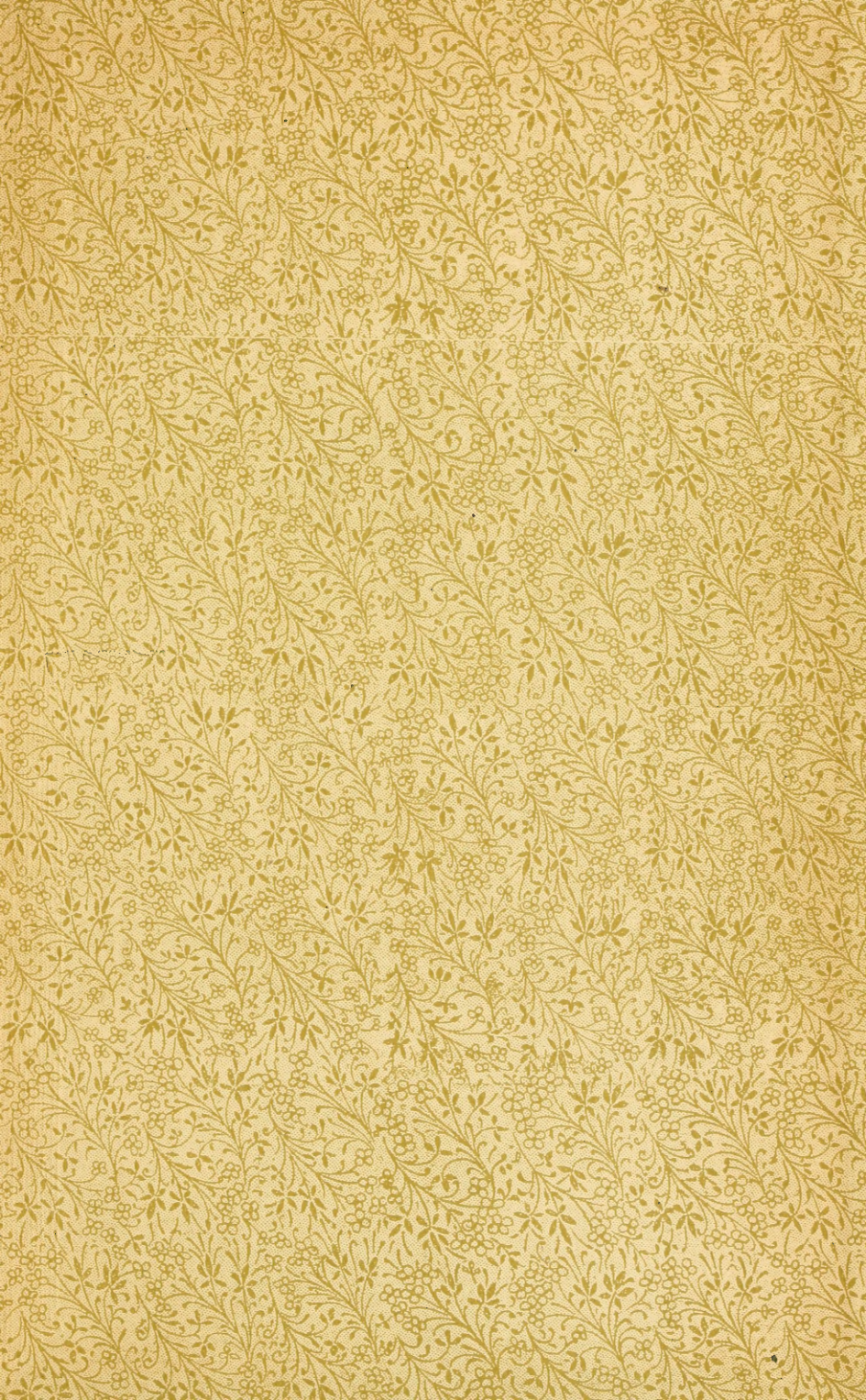
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